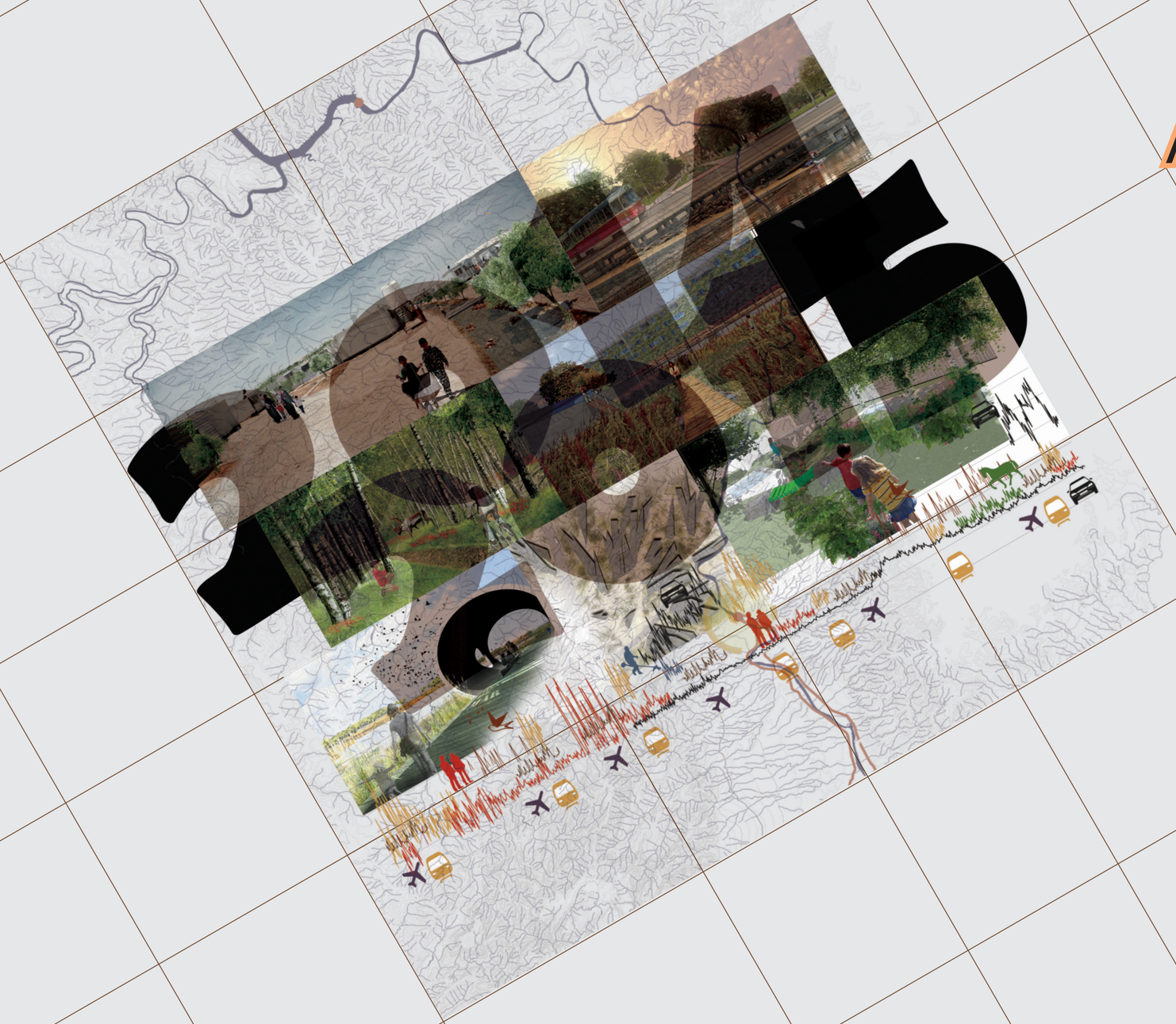
MSc THESES OVERVIEW LANDSCAPE ARCHITECTURE GROUP



September 2014 - August 2015

MSc THESES OVERVIEW LANDSCAPE ARCHITECTURE GROUP

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September 2014 - August 2015

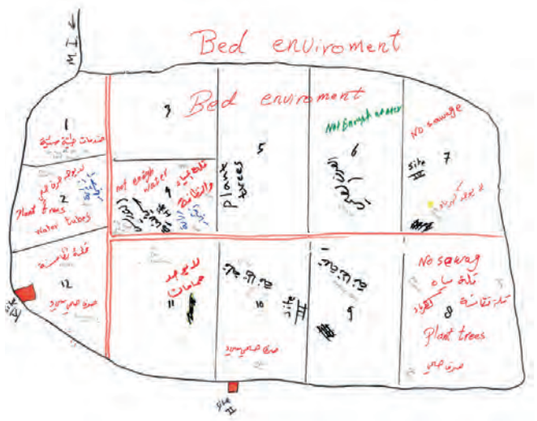
Content

Robert Kruijt
Dr.Ir. Ingrid Duchhart

Rightful landscape

A response to an unexpectedly long stay in the Zaatari camp

Problem investigation

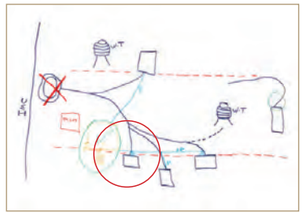


One of the results drawn by the participants.

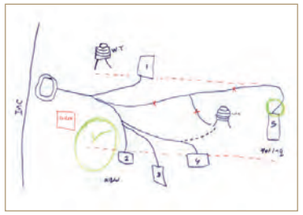
Participatory design

Step 1
This shows an outline of the existing situation. Ditches are connected from caravans that lead to a grey water pit.

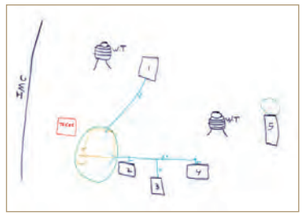
Step 2
The first idea by the participants was to construct pipes from the caravans to a communal garden.

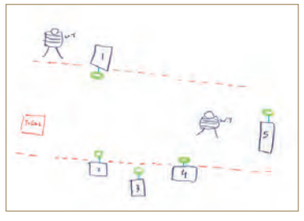


Step 3
The drawing shows two possible communal gardens connected by pipes.



Step 4
The drawing shows a technical plan. When I confronted the participants that a financial contribution was necessary, they stepped back. They calculated the cost of this design, which was converted to be 35 Euros. They were not convinced and so we moved on to create a cheaper design.





Step 5
This step shows the final result. The participants made a cheaper design that has the same result; to get rid of the grey water. The physical outlook therefore changed. Instead of a community garden, they will have private, household gardens, which cost only 2 Euros.

Photo montage

He would like to have gardens and a place to swim because it's hot in the summer.

This girl wants more light in the camp because sometimes she feels unsafe.

Transform idea into solution

The initial situation of the site.

The participants were initially not convinced that they had to contribute to the solution.

The result after one week. The stream of grey water has stopped due to the gardens.

The refugees intensely participated in the design process.

The result after two weeks. The street has dried up due to the grey water constructed gardens by the participants.

Refugees conducted the work independently after the design process.

Abstract

Today there are a greater number of refugees than at anytime since the Second World War. Currently, there are 51.2 million refugees worldwide, who are victims of conflicts caused by violence, racial discrimination, natural disasters, and/or social identity issues. The Syrian Civil War is one of the worst of its time, creating over 3 million refugees. 15% of the Syrian refugees have arrived in refugee camps. The United Nations High Commissioner for Refugees (UNHCR) is taking control in order to manage the influx of the large groups of people.

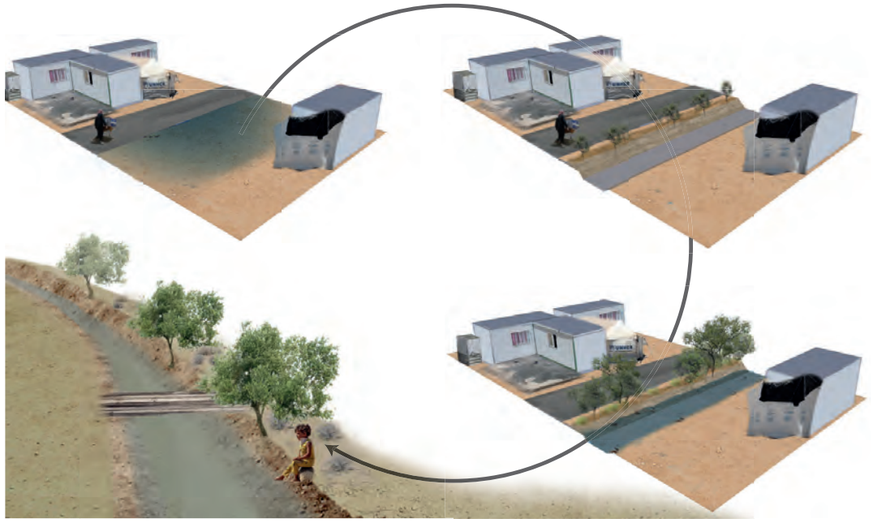
The UNHCR has developed a Handbook for Emergencies. This handbook indicates how a camp should be built and how aid should be provided to refugees based on the levels of severity. Camps are typically designed for a temporary period of time. Unfortunately, in most cases, they last for a longer period. The average time of a refugee emergency is 17 years. The first problem is that during the development and design of the camp, there is limited thought given to environmental aspects. Mass displacement can have a negative effect on the environment quality. The second problem is that the camp operations are mostly organized from the outside and therefore the residents' input in what they call "their temporary land" is very low. Both these problems lead to a limited focus on the significant social and natural contexts. As a result, the chances of a solution mismatch are high and the assistance from humanitarian services can easily miss their target and/or cause undesirable side effects.

This research focuses on the second largest refugee camp in the world, located in Zaatari in Jordan. Due to inadequate infrastructure, the camp and inhabitants and villages around Zaatari suffer from negatively impacts on the environmental quality. In addition to the landscape analysis, this research uses the Green Town Workshop method designed by Duchhart. This method allowed me to identify the problems, needs and wishes of people who are dependent on external aid. The method does not stop by identifying needs and wishes. Instead, it is a transformative approach, where I aim to empower the participants to find local, adaptable, solutions that can be implemented by the refugees themselves. The results indicated that people are able to recognize and transform their problems into desirable wishes.

Because of the transformative approach to the data generated in Zaatari, it was crucial for further design options to be strongly enhanced with the desire and capability to be executed by the refugees. The design options of this thesis are open-ended. The design options involve the implementation of grey water gardens, creating swales, and developing orchards. This will have a direct positive result on the camp and surrounding area, both in the short- and long-term. The solutions are flexible due to the numerous uncertainties, which include: an increase or decrease of refugees; the level of service provided by aid agencies; and the extent of permanent settlements in Zaatari.

These images assume a situation where Zaatari is more or less maintains the same layout. That means that refugees continue to live here. When refugees, or in the future, maybe Jordan inhabitants, settle here permanently, is it a matter of care. The grey water gardens and the orchards should be maintained by the current inhabitants. So, the success of a greening future depends on the engagement of the current inhabitants.

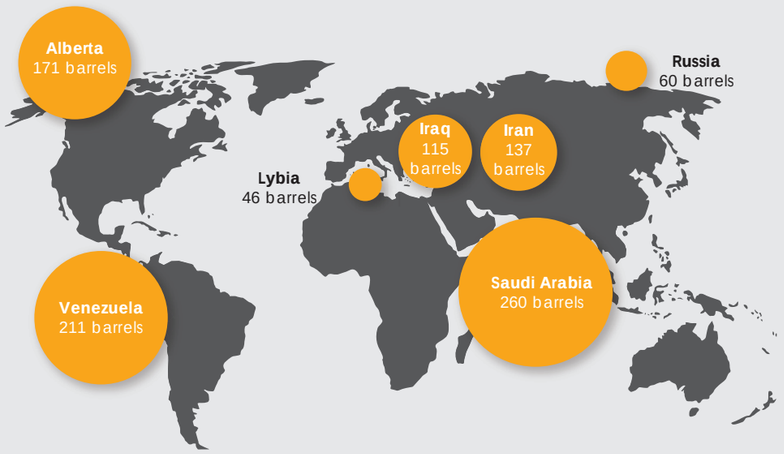
Polluted water is currently running on the surface. Grey water gardens will filter the polluted water in a hole parallel to the caravan where trees can grow and suck up clean water.



Rainwater will improve the soil quality and improve the vegetation potential, which creates green structures.

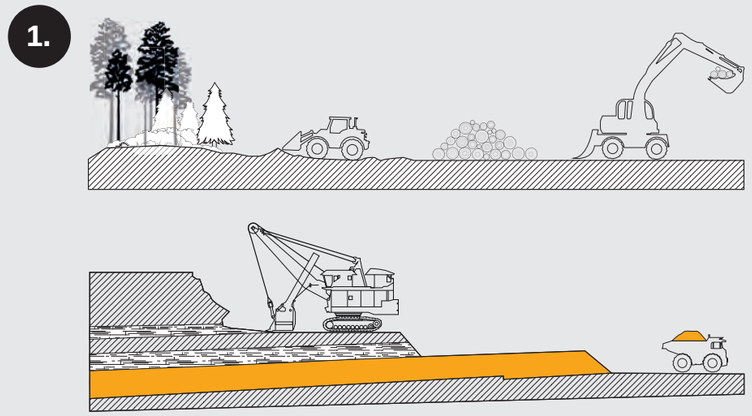
Greening potential in and around households for Zaatari. Green spaces and the ability to cultivate the land for the refugees' personal consumption.

An agricultural field allows cultivation of the land for personal consumption.

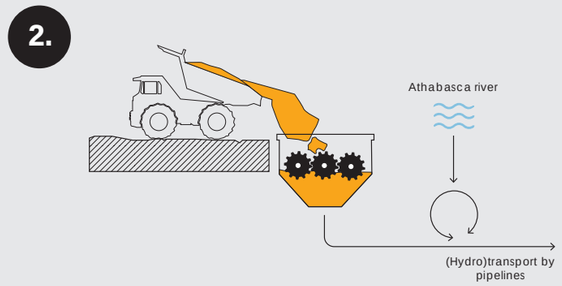


Comparitive oil reserves (billions of barrels)

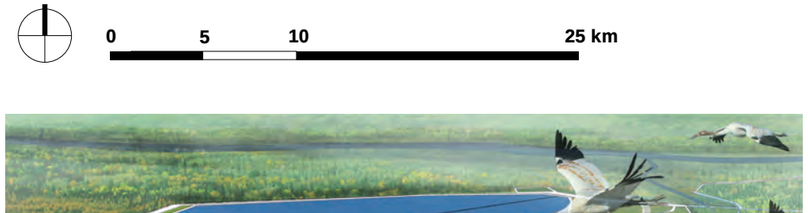
The mining process in 6 STEPS

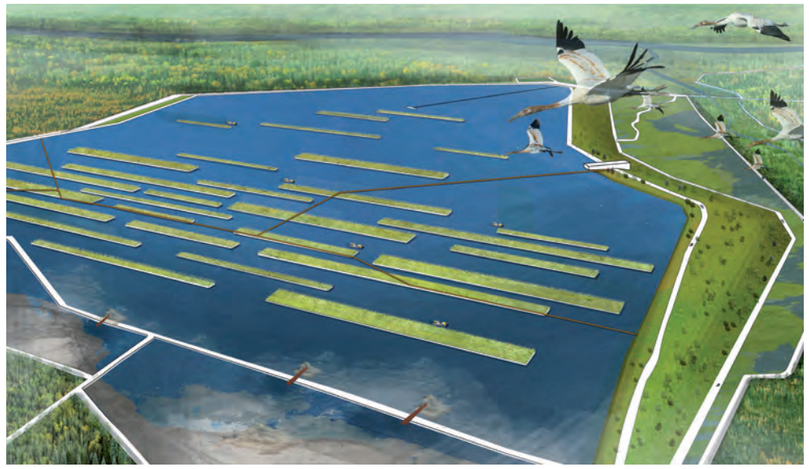


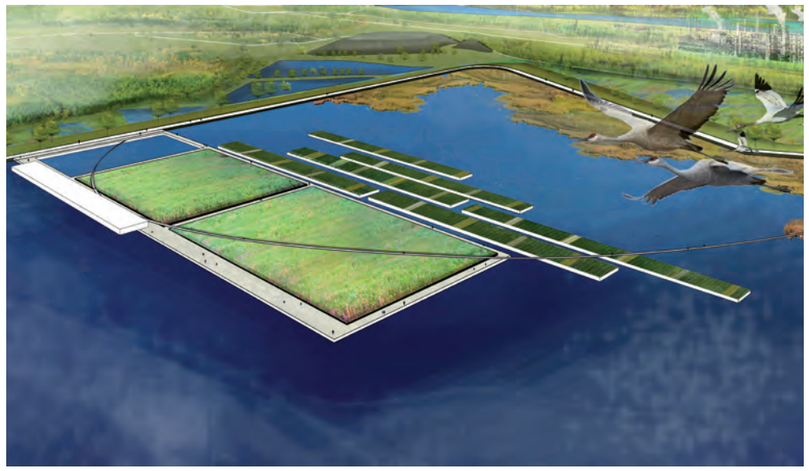
1. Mining In this phase the surface is stripped until the bitumen containing layer is reached



2. Conditioning The bitumen is seperated from sand and clay. The oil sands are crushed and mixed with water, this results in a slurry which makes (hydro)transport possible







A floating water purification system to clean the process affected water to increase the percentage of recycled process water and decrease the extraction of water from the river

Floortje Goossens and Anne Nijland
Ingrid Duchhart and Paul Roncken

Oil sands 2.0

A landscape based design approach towards a more sustainable landscape system

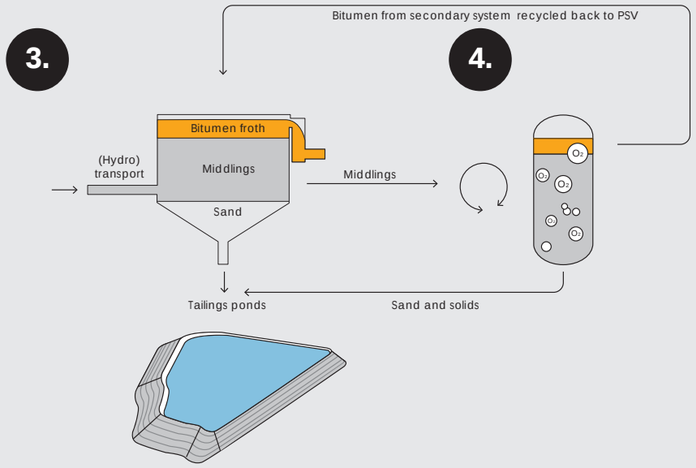
Abstract

The oil sands industry in Fort McMurray, Alberta, forms the third biggest oil resource in the world nowadays. The recovery process of crude oil (called bitumen) is very complicated and highly energy consuming, because the bitumen is mixed with sand, water and clay.

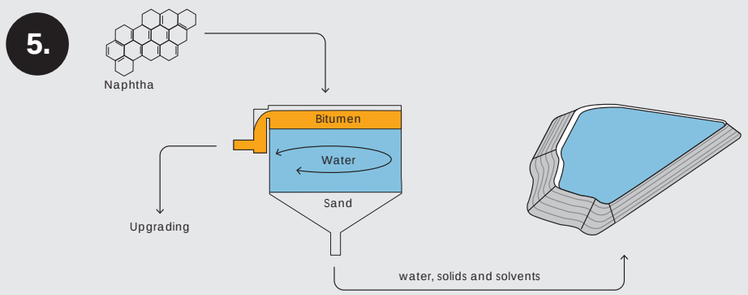
Bitumen, has to be removed from the sands using either open pit mining or in situ methods, we focussed on the mining method. This leads to massive surface disturbance. To separate the bitumen from the sand and clay, it is mixed with hot water. The water is extracted from the nearly located Athabasca River. After the separation process water is too polluted to be returned back into the river and stored in enormous tailings ponds. As a result, more and larger oil sands tailings ponds have been developed over the years and extraction from the Athabasca river continues.

Besides these devastating environmental problems, the region also struggles with various social problems. From an isolated region in the sub-arctic, native inhabitants suddenly had to deal with an intense and prolonged flow of people who came to work in the area.

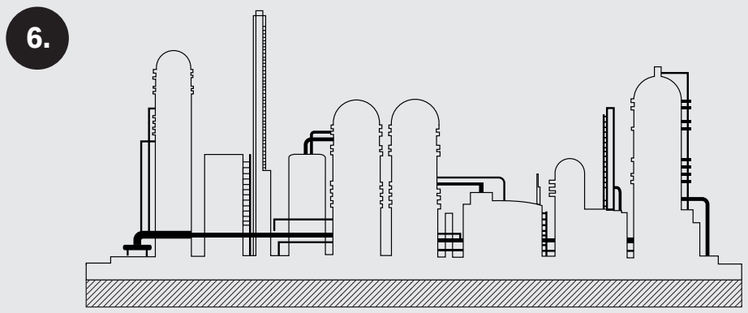
We as landscape architects known for taking an integrative approach, when addressing problems like the oil sands industry have strived to develop a more sustainable landscape. The design solutions we developed involve a wetland treatment system to clean the process affected water, a new way of reclaiming the open pit mines and a recreational network to see nature's self-regeneration capacity.



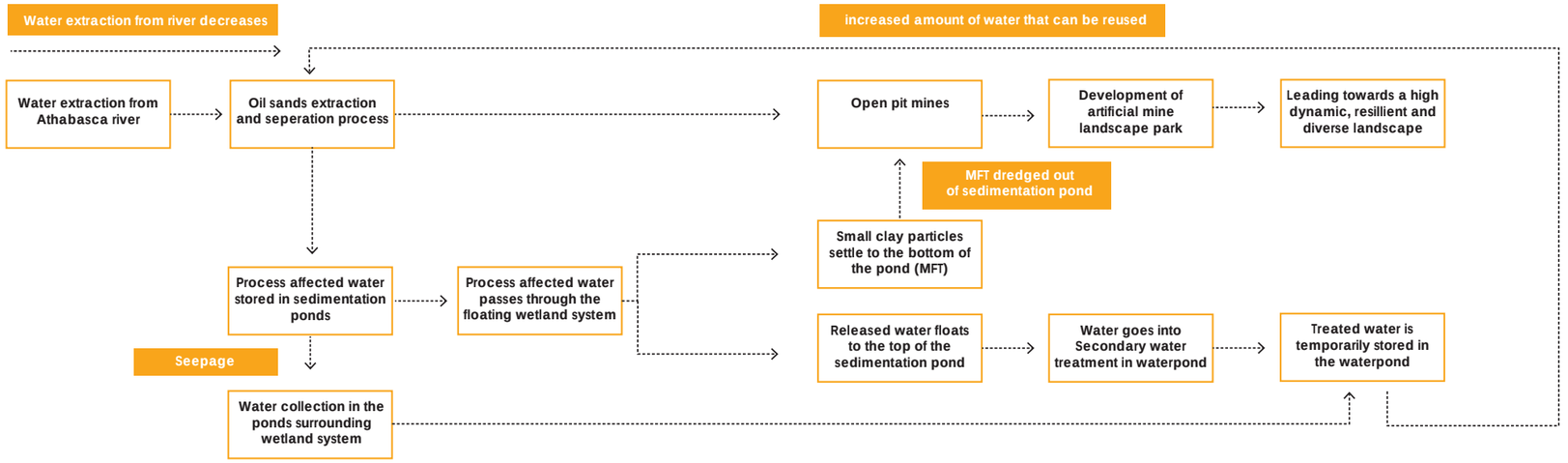
3 & 4. Seperation The slurry is put into a seperation vessel within this vessel the slurry settles into three layers, sand and solids is stored in ponds



5. Froth treatment In this phase the bitumen froth from the seperation vessel is further cleaned from its water and solids

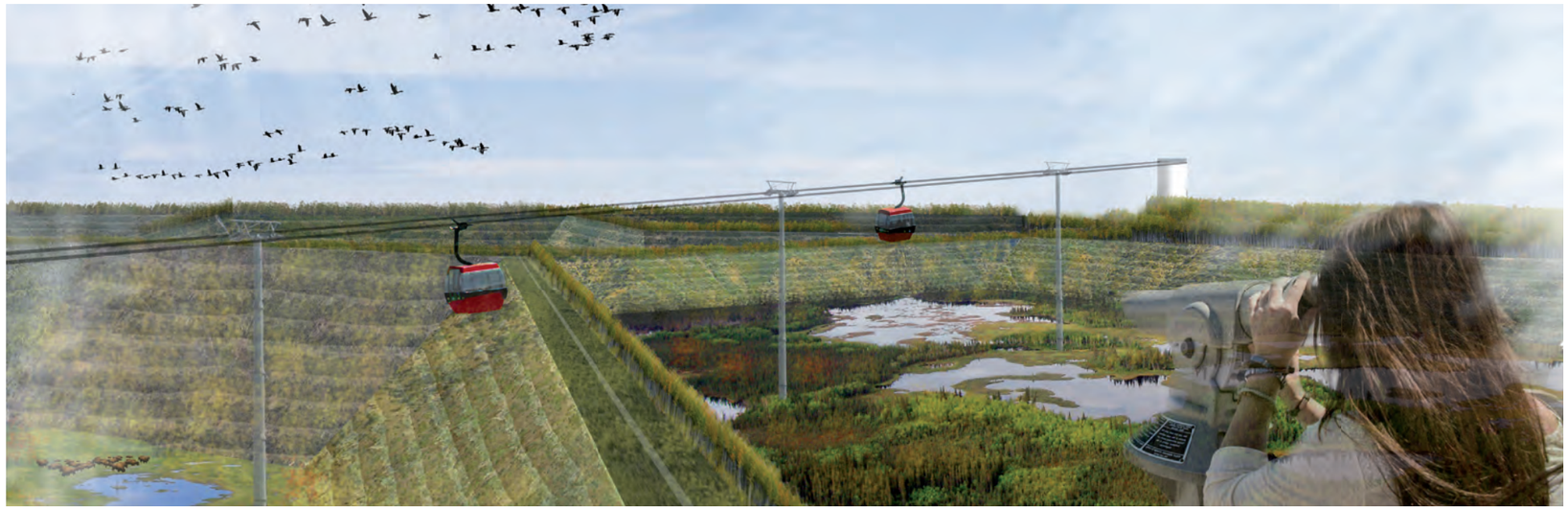


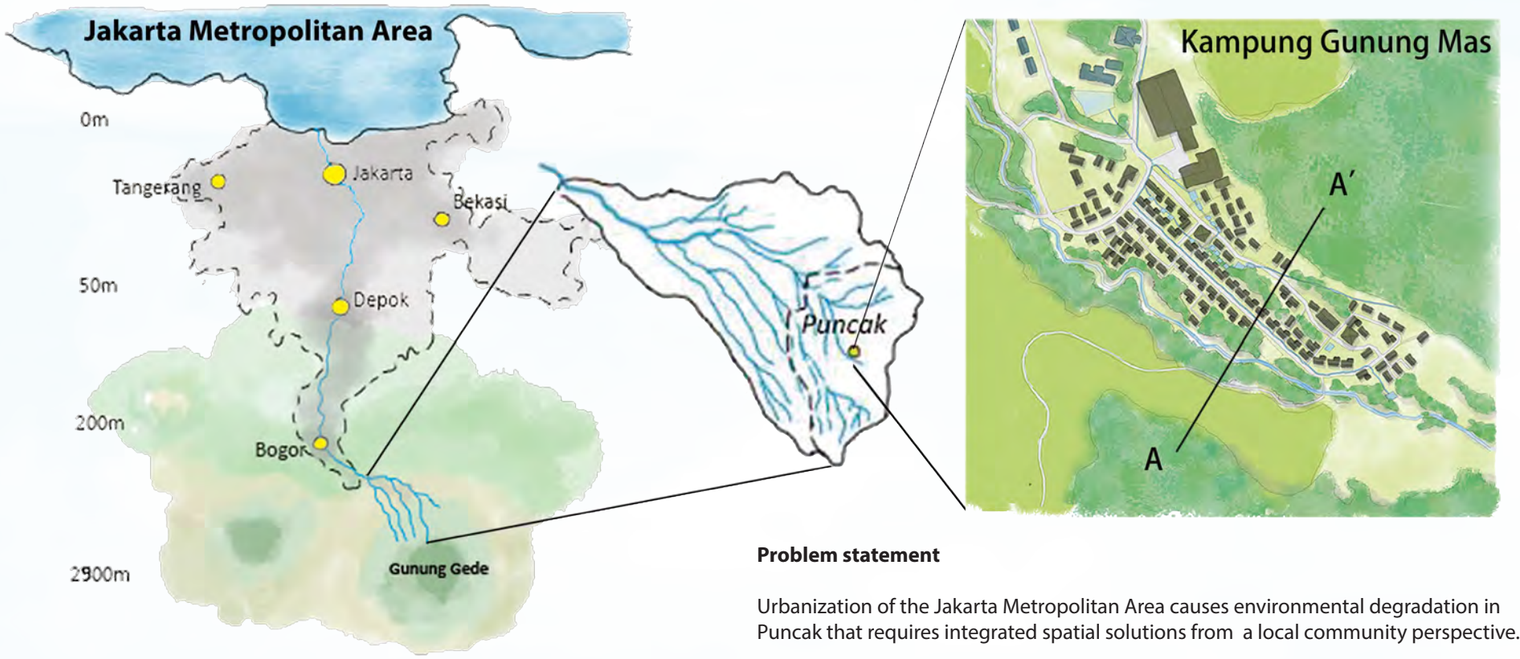
6. Upgrading In the last step the bitumen will be changed into a lighter form of oil

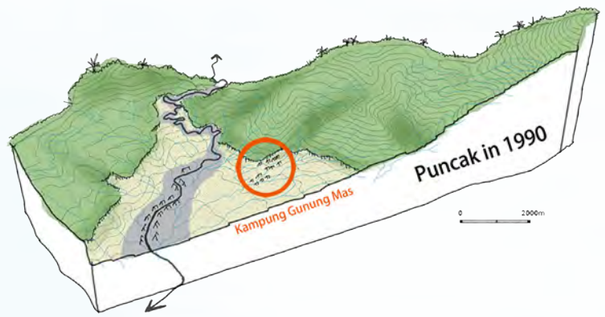


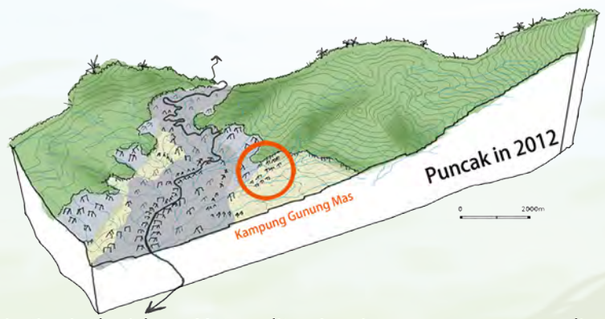
The developed design solutions in a scheme (for more background information about workings check our awesome thesis)

The reclaimed landscape will eventually lead to different landscape typologies, like an open pit mine (left) or a lake (right)









The urbanization in the Jakarta Metropolitan Area increases pressure on adjacent regions. The area of Puncak is considered as a conservation area for the delta due to its function as a water recharge zone. The land use consists of rainforests and tea plantations but urban areas are expanding.

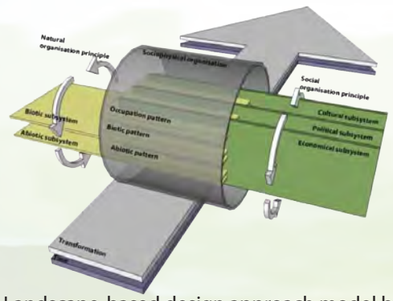
Rural communities are under pressure and face environmental degradation. This study aims for integrated spatial solutions from a community perspective.

The study takes a transformative landscape-based design approach in which the community of Kampung Gunung Mas comes to integrated spatial solutions to their environmental problems.

Problem statement

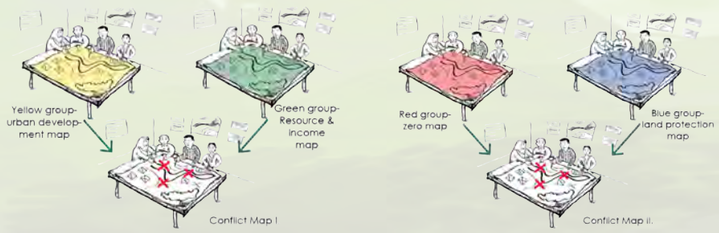
Urbanization of the Jakarta Metropolitan Area causes environmental degradation in Puncak that requires integrated spatial solutions from a local community perspective.

Cross-section of Kampung Gunung Mas



The community of Kampung Gunung Mas got involved in a 2.5 day participatory environmental planning (PEP) workshop. This is based on the Green Towns approach by Duchhart (2007). Photography is integrated in the entire process to make it more personal and to help the participants imagine their future environment.
The workshop is facilitated by staff of Agricultural University of Bogor (IPB) and NGO Ciliwung Institute.

Landscape-based design approach model by Duchhart (2007). This study adds the emphasis on the transformation process.



The participants from Kampung Gunung Mas combine their knowledge about nature and society to identify problems and solutions in their living environment.

Name students: **Thomas van den berg and Hanshu Liu**
Supervisor: Dr. Ir. Ingrid Duchhart
External supervisor: Ir. Wiwi Tjiook
(Indonesian Diaspora Network)

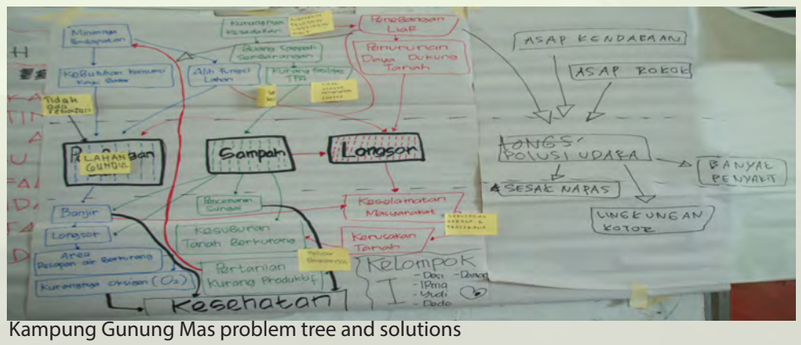
Gotong Royong-Working Together
Transformative landscape based design with kampung communities in West-Java, Indonesia

Abstract

Increasing mega-urbanization in the Jakarta Metropolitan Area (JMA) causes frictions in the environment of fringe areas. Puncak, is considered as a conservation zone in the upstream of the Jakarta delta, however, as fringe area of JMA the local communities are under pressure of environmental degradation. The Agricultural University of Bogor (IPB) and local NGO Ciliwung Institute, audiences of this thesis, are working in Puncak with their local experience on Participatory Rural Appraisal (PRA) projects. This thesis proposes to further develop visual methods in the Green Towns approach, which connects the landscape-based design approach to PRA. The research question is:
How can a landscape-based design approach help local Kampung communities in Puncak to come to integrated spatial solutions to local environmental problems?

To answer this question, different methods were executed in both the Netherlands and Indonesia. By taking field walks, having open-ended talks, observations, photo and sketch studies, landscape analysis helps to get an impression of the relationship between human and nature of the study area. The participatory workshops include the proven Green Towns workshop of Duchhart, Photoshop workshop developed by Bergstra and Hornman, and Timeline workshop. The workshops provide local knowledge and knowledge ownership for different audiences.

The data collected in Puncak were analysis and were used as input for the landscape plan. The landscape plan provides design principles and recommendations for applicable future actions instead of blueprint design. The integrated spatial solutions as proposed by the participants are represented by five main landscape design principles: reusing of garbage, composting, multi-functional open spaces, terrace, planting trees. The answers to the research question are both methodological and physical.



Kampung Gunung Mas problem tree and solutions

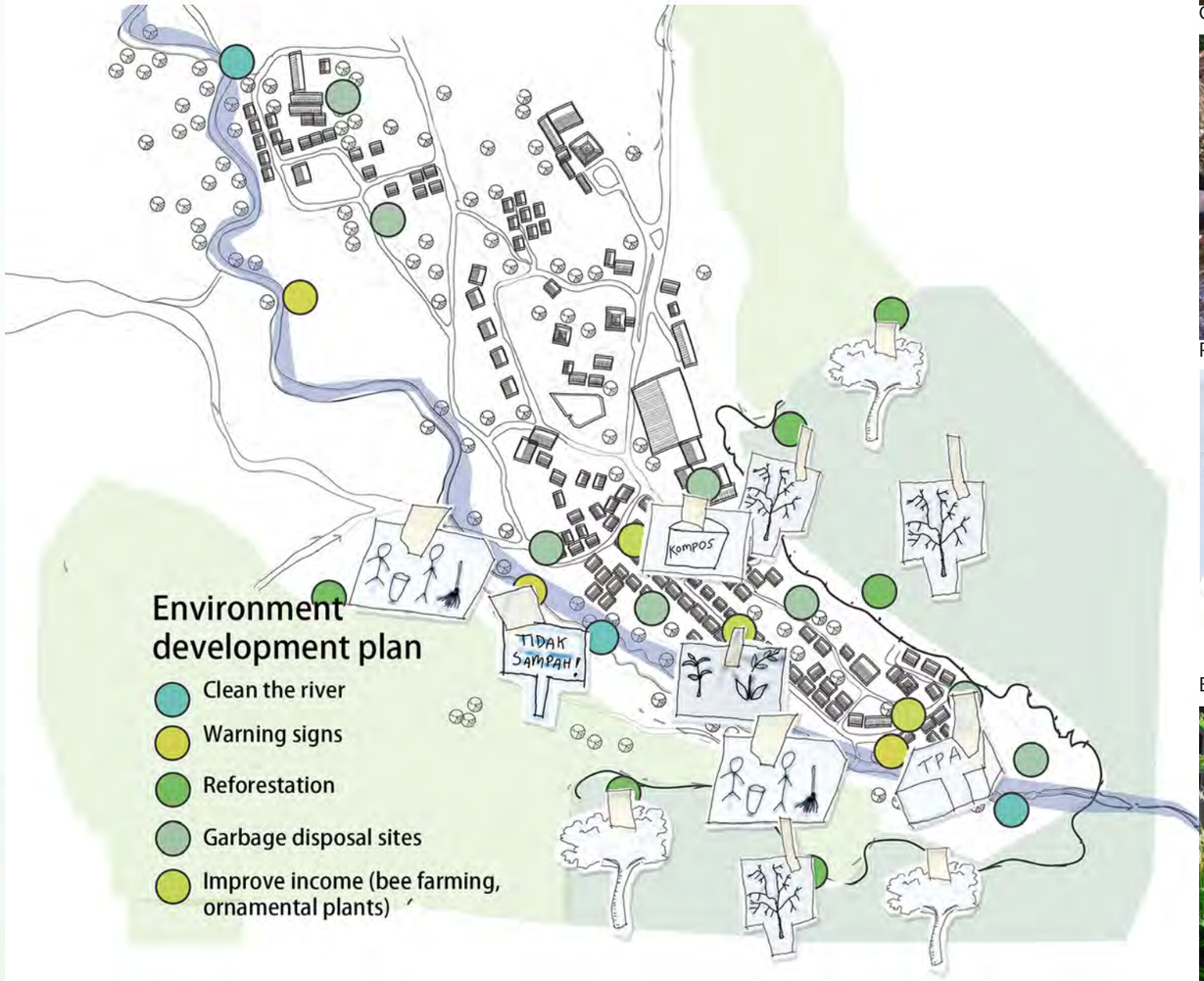
Open spaces

Composting

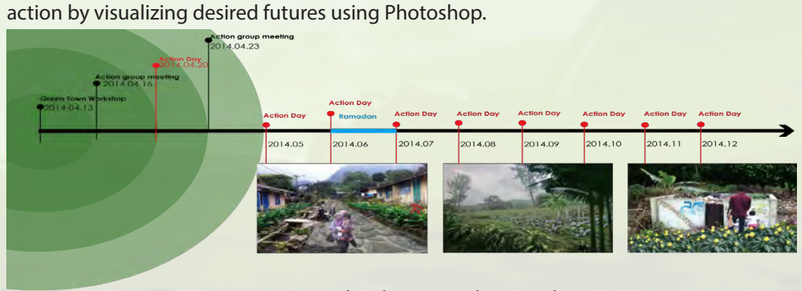
Reforestation

Garbage recycling

Terraces



The result is the environment development plan in which participants indicated certain actions by small drawings. The plan is put in to action by visualizing desired futures using Photoshop.



Kampung Gunung Mas environment development plan time line 2014

The landscape analysis and PEP process results in 5 landscape design principles which can help Kampung Gunung Mas to develop in the future. The principles are combined to maximize efficiency and to provide integrated spatial solutions. Garbage in the river and the Kampung can be collected and this material is the engine to realize other aspects of the design. The participants placed their actions in a timeline to plan further transformation.

Group mapping

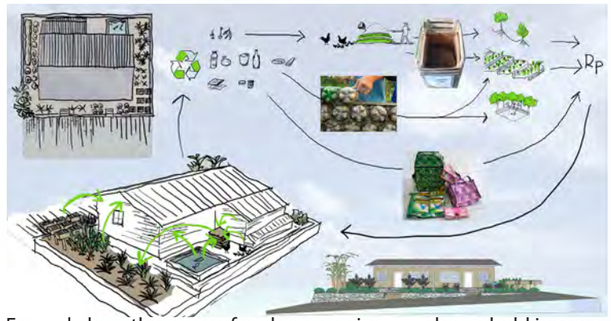
Field trip interviews

Presentation of group finding

Problem before workshop

Desired image with Photoshop

New situation after actions



Example how the reuse of garbage can increase household income

It starts from the house unit scale and collective effort can result in a bigger solution such as terracing the river banks to prevent further erosion and increase the income.

Reuse of garbage can make the Kampung more attractive

Larger materials such as old tires and plastic bottles can be reused to construct terraces which will prevent erosion and increase income.

Conclusion

How can a landscape-based design approach help Kampung communities in Puncak to come to integrated spatial solutions to local environmental problems?

- By involving Kampung communities in PEP workshops (based on Green Towns Workshop) supported by at least a local NGO to ensure continuation
- Integrating photography and photo modification in the PEP workshop increased the sense of ownership, triggering further transformation
- Garbage recycling as engine to protect environment and enhance economy, plus beautification

POSIONING GROWTH IN THE CITY OF UTRECHT

Step 1: Defining open areas

- open space
- offices
- small industries
- university
- stadium
- army barracks
- age neighbourhood

Build housing surfaces:
- 0- 10 %
- 10 - 20
- 20 - 40
- 40 - 90

Step 2: Indicate wind corridors

- barrier for wind (line)
- barrier for wind (area)
- areas to safe from growth

Step 3: Indicate edges for thermal breeze

- edge for thermal breeze
- areas to safe from growth
- age neighbourhood

Build housing surfaces:
- 0- 10 %
- 10 - 20
- 20 - 40
- 40 - 90

Step 4: Indicate greenery

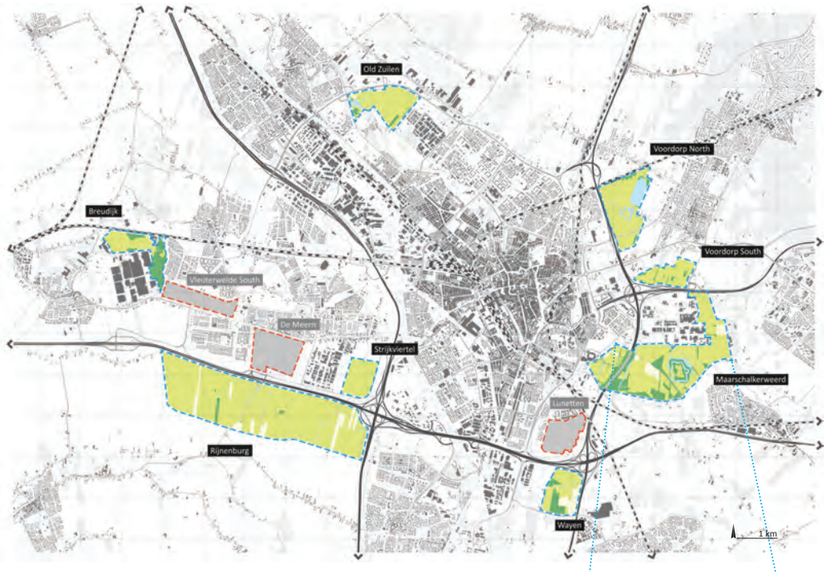
- green areas
- green connections

Surfaces:
- Forested green space
- Non-forested green space
- Agriculture
- Water

Step 5: Combining steps and position locations for urban growth

- open area
- are to safe from growth wind corridor
- are to safe from growth thermal breeze
- green area
- green connection
- expansion location
- densification location

Build housing surfaces:
- 0- 10 %
- 10 - 20
- 20 - 40
- 40 - 90



Expansion location Maarschalkerweerd

1. Integrating existing greenery
2. Improve and expand the green network
3. Safeguard the wind corridor
4. Support thermal breeze
5. Making use of the flowing water

Areas that can climate-responsively be built in the future

R. (Rick) Lensink
dipl.ing. W. (Wiebke) Klemm
dr.dipl.ing. S. (Sanda) Lenzholzer MA

Climate-responsive urban edges

Designing thermally comfortable locations for urban growth at the peri-urban zone from the city of Utrecht, the Netherlands.

Abstract

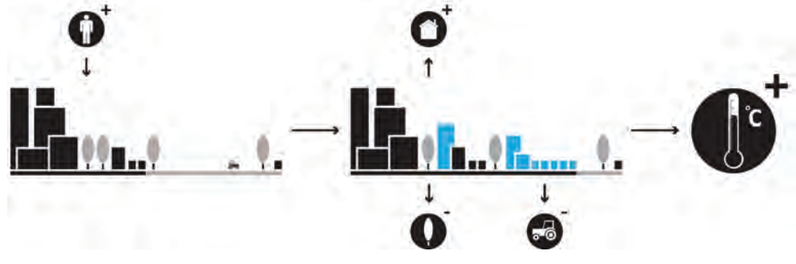
In this thesis, locations for urban growth are proposed for the city of Utrecht. These locations are designed from the perspective of urban climate and future inhabitants' thermal comfort.

Current population and household predictions (relative growth of 21% and 18%) designate the city of Utrecht as the fastest growing municipality in the Netherlands. This growth is mainly focused in the city edge and results in a densification and expansion of the city's built-up surface. At the same time, urban growth result in negative effects on the urban climate because of the change in land-use and increase in built-up surface, especially during warm periods that will only increase due to climate change. This causes negative effects for humans with emphasis on vulnerable groups; young children, elderly people, and people with cardiovascular diseases.

The challenge in this thesis project is to design locations for urban growth that are positioned to minimizes the negative effects on the city's climate, and are configured to ensure inhabitants' thermal comfort. The main question is to find out *"what are key aspects in the design of locations for climate-responsive growth at the city edge of urbanizing cities?"*. To answer this question, the thesis started with determining the city edge and a literature study on existing urban climate knowledge. According to the findings; greenery, wind, water and urban geometry are the key aspects that have different influences on the urban climate. On the basis of these key aspects, a step-by-step analysis has been developed and applied to position and configure locations for climate-responsive urban growth, and to indicate challenges for the design.

The positioning of locations resulted in 8 locations for climate-responsive expansion and the configuration of one of those locations has been tested in a Master plan and in detailed designs. In addition, the research approach and the developed methods could be used as a tool for other cities dealing with the same problems. The site specific outcomes can be an inspiration to other cities as well.

Problem identification



CONFIGURATION [design] OF MAARSCHALKERWEERD

Neighbourhood Maarschalkerweerd
For neighbourhood one, Maarschakerweerd, a configuration of building blocks is designed which safes the existing greenery and is open for thermal breeze. This configuration can be used as an example for all the future new neighbourhoods in the expansion location.
The edges of the neighbourhood are open for thermal breeze, and there is plenty of space for ventilation of the neighbourhood. Existing greenery is reused in the design and is mainly used for guiding slow traffic.

Lengend

- areas for future build-up surface
- sportfields
- grass surfaces
- forested surfaces
- agricultural surfaces
- water
- tramline
- fast traffic (car roads)
- slow traffic (bike/walk)

Road to science
Road to science forms the line between the existing housing district and the open grass fields. Demolishment of the first row of houses gives opportunities for thermal breeze and creates a buffer park between the road and the neighbourhood. To support the cool airstream, the tramline is designed with a grass surface and an extra row of trees is planted. The trees give shade to the asphalt, that will heat up less rapidly.

Landscape park NHW
This park keeps the windcorridor open, makes the New Dutch Waterline re-liveable, and is a proposed extension of the Beatrixpark. Several function are spread through the park, but all without blocking the entering of regional wind into the city. Routing through the park allows recreational activities and connection to neighbouring districts.

Oosterspoorbaan
Since the closing of the railroad Oosterspoorbaan, it fell into disrepair. Redesign resulted into a fast connection for slow traffic between the city centre and Maarschalkerweerd. The structure of the railroad is still recognizable in the surface and greenery is "spontaneously" scattered along the route. Trees provide shade for the users and will break a possible channeling effect of the wind.

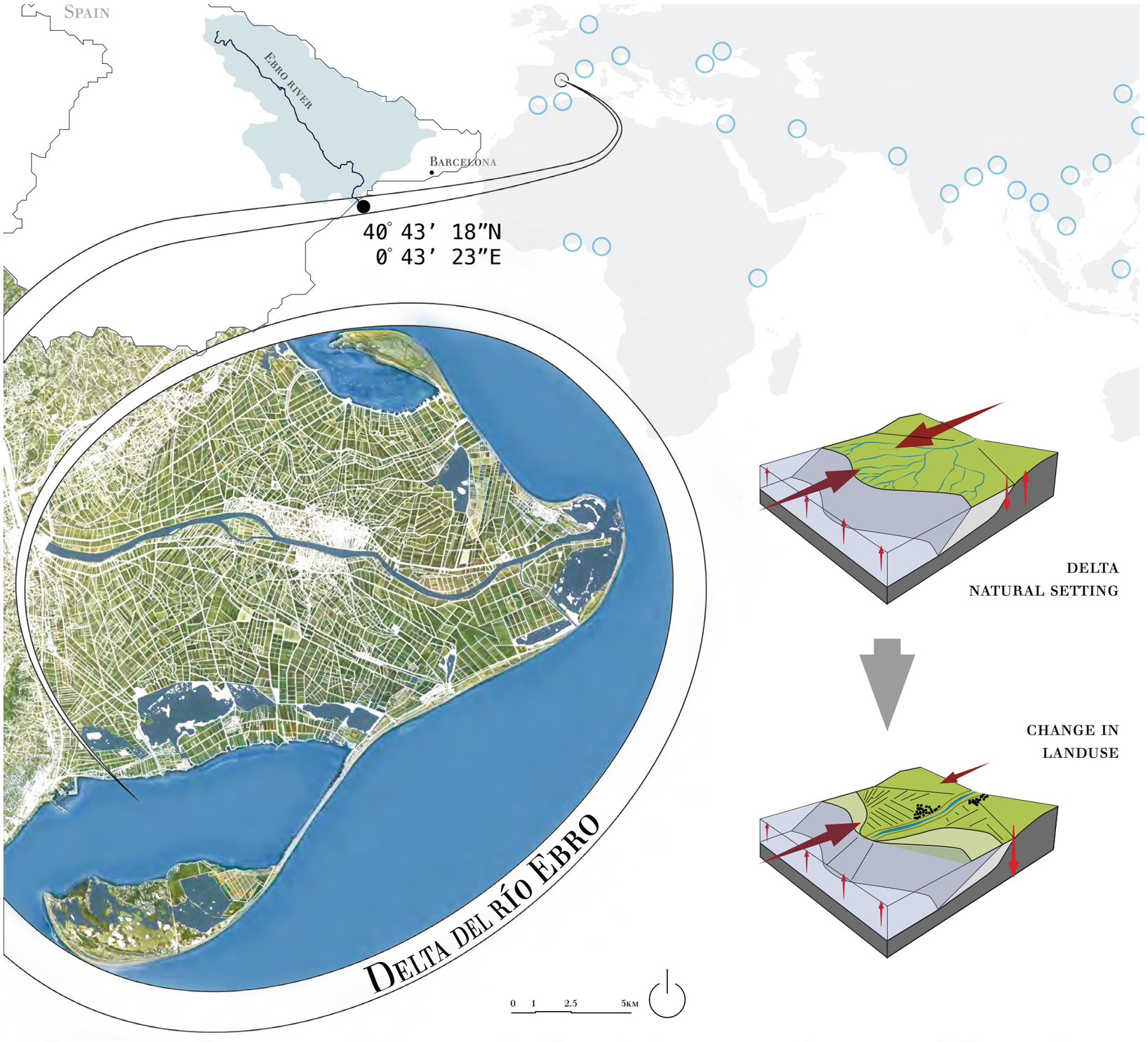
Davide Caspani

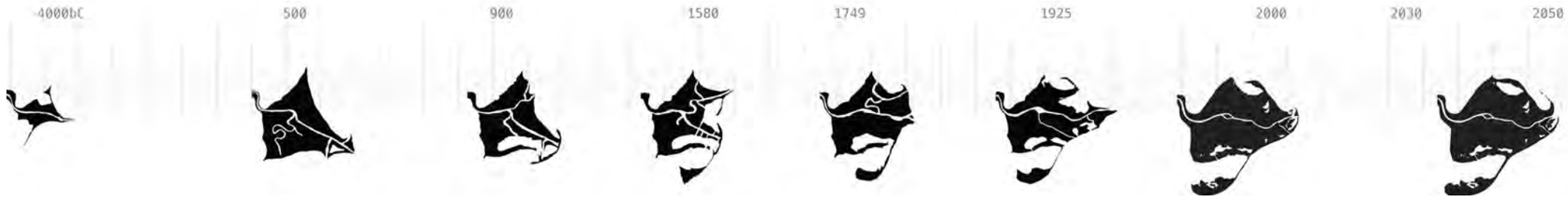
dr.ing. Sven Stremke
prof. ir. Adriaan Geuze

DeltaLab

Designing ecosystems:

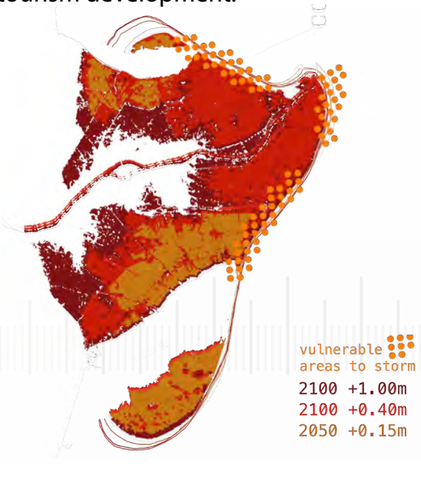
THE EBRO DELTA





This is the Ebro's Delta, Catalunya's territory, Spanish blood and Moorish roots.
Deltas are naturally dynamic coastal systems that are unique in their close links to both land-based fluvial and coastal ocean processes. They hold ecological and economic value throughout the world and are major centers of population and agriculture (Pont et al., 2002)
The Delta is an ecologically rich environment made of freshwater, brackish and saline lagoons, salt marshes and small dune sandy areas. Nevertheless, most of the delta surface is devoted to rice production, conveying economical importance to a landscape which has particular relevance within the Mediterranean Basin as one of the biggest wetlands. Likewise many other historical landscapes, the Delta is facing several transformations on its local cultural identity. At the same time, changes on the global natural assets are threatening many natural and man made ecosystems. Evolution never stops.
The Delta is a vulnerable ecosystem which is facing many environmental challenges. Urban and agriculture developments represent the most human related stress factors for the environment, along with the increasing severity of climate phenomenon. Considering the scenarios for the coming years, stakeholders of the area are facing important decisions: actions are required.

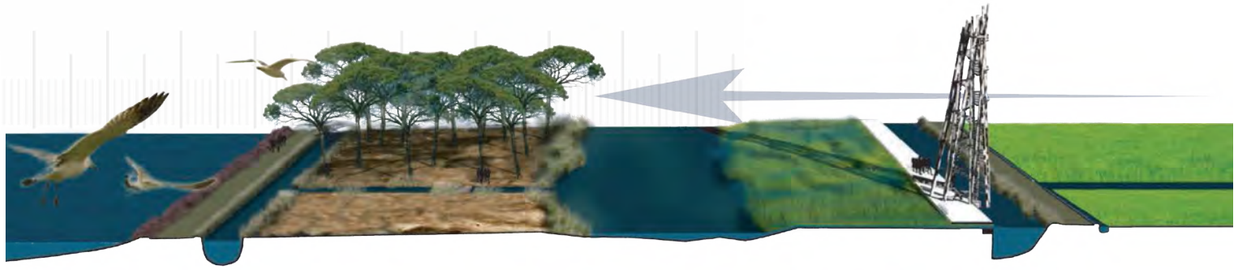
A Landscape architecture approach offers an holistic understanding of the delta ecosystem and merge a pragmatic engineering approach to aesthetic ecology, offering solutions at regional scale that can arise new opportunities at human scale. The plan 2050 envisions one possible step of the Delta evolution where flood safety is guaranteed by natural infrastructures and offers opportunities for water purification, agricultural expansion and tourism development.



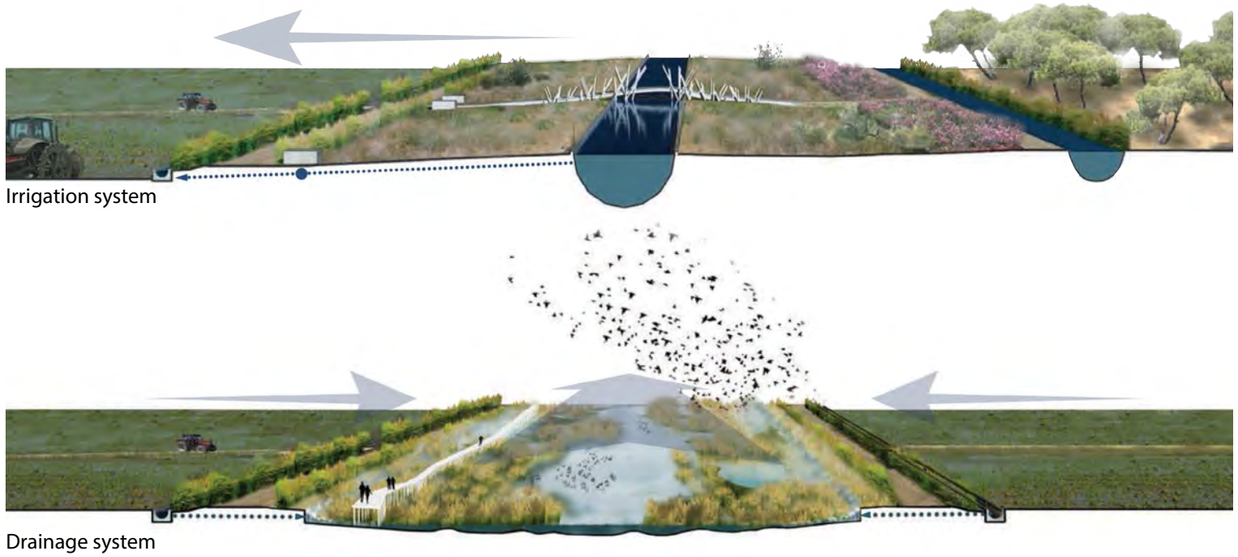
PROPOSAL PLAN
2050

BIRD EYE VIEW
New agricultural areas and natural ecosystems:
A productive landscape supported by ecological engineering systems offers spaces for leisure

DELTA WATER

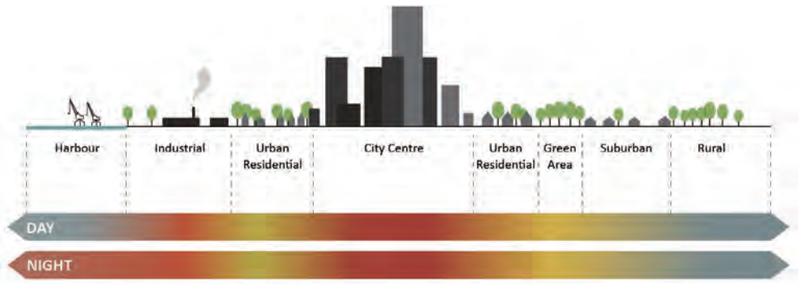


Water system



Irrigation system

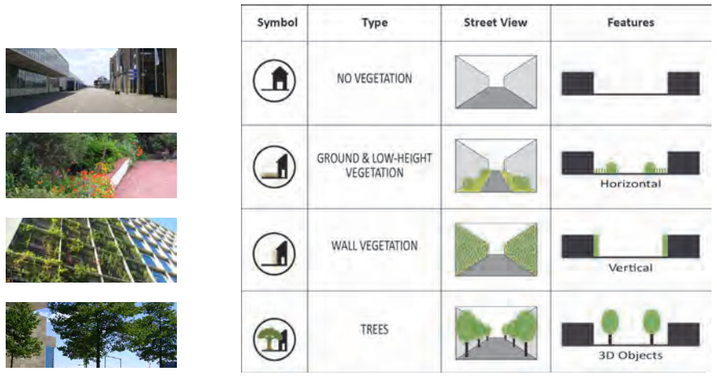
Drainage system



Cities suffer from higher temperature in densely developed urban areas such as city centres and industrial harbour sites. This phenomenon is commonly known as urban heat island.

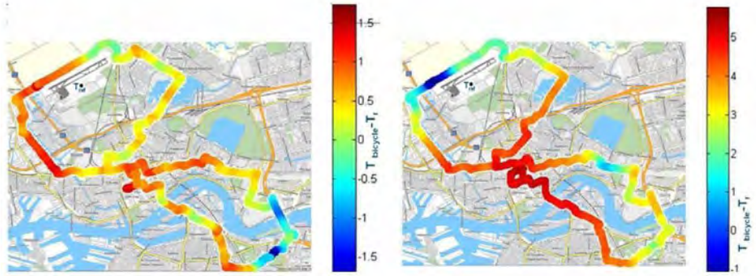
Development scenario and zoning plan of the case study area Merwe-Vierhavens. According to Gemeente Rotterdam, 2011.
This thesis is undertaken as part of the research study for the redevelopment of Merwe-Vierhavens launched by the municipality of Rotterdam and Rotterdam Port Authority.

Four functional zones in harbour contexts were categorised to represent the most common functions adapted to a former harbour area:
(1) port-industrial; (2) new business; (3) residential and (4) residential waterfront.



Urban vegetation positively affects people's perceived thermal comfort and moreover enhances aesthetic appreciation of outdoor spaces.

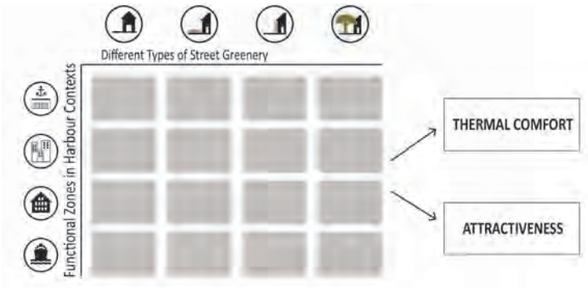
Three different types of urban vegetation were applied to represent the general green elements at street level based on Bowler's (2010) categorization:
(1) ground and low-height vegetation, (2) wall vegetation and (3) trees.



Air temperature within street canyons in the city of Rotterdam (Hove et al., 2011), which is related to outdoor thermal comfort of pedestrians in urban areas.

This research attempts to tackle the heat-related problems by improving human thermal comfort and enhance the attractiveness of outdoor spaces in harbour areas.

Street analysis according to harbour functional zones in Merwe-Vierhavens area.



For investigating people's long-term perception of street greenery in relation to thermal comfort and attractiveness of outdoor spaces, the questionnaire was designed in a visual approach. Within four harbour functional zones, different greenery types were used to formulate various settings for the visual questionnaire.

Christy Tang
Wiebke Klemm

Design Guidelines for Thermally Comfortable and Attractive Streetscapes in Harbour Areas Based on People's Perception of Street Greenery

A Case Study in Merwe-Vierhavens, Rotterdam

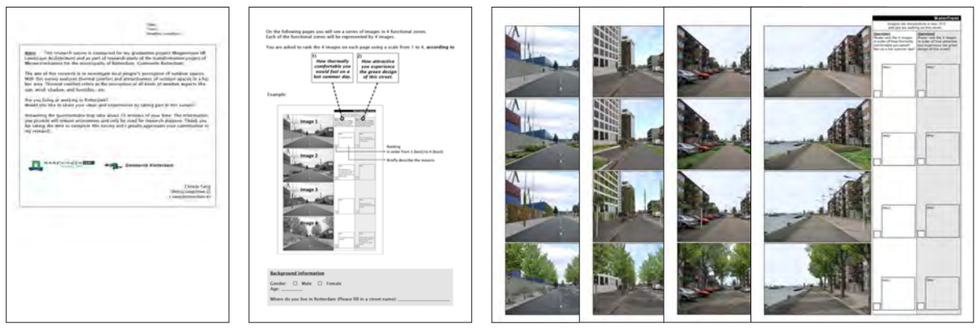
Abstract

For answering the global issues associated with climate change and post-industrial urban development in contemporary world port cities. This thesis proposes a set of design guidelines for thermally comfortable and attractive streetscapes in harbour contexts based on people's perception of street greenery.

In the present study, literature review and questionnaire survey were applied to investigate the impacts of different types of street greenery on people's long-term thermal perception and aesthetic appreciation. The questionnaire study in the form of online and face-to-face surveys were conducted in the city of Rotterdam, the Netherlands, in 2014. Within four harbour functional zones (port-industrial; new business; residential; residential waterfront) four alternatives of greenery types (no vegetation, ground vegetation, wall vegetation, trees) were visually evaluated by local people (N=106). Survey data was analysed by using descriptive statistics and qualitative content analysis methods.

From all investigated greenery types, trees were top-ranked in terms of thermal comfort (mean 3.84) and attractiveness (mean 3.68) on a scale range from 1-4; whereas no vegetation in all zones was ranked lowest. Low and wall vegetation was evaluated similarly for both aspects. Based on the survey results, it is recommend to use different types of street greenery, especially trees combined with other green elements, to design the streetscapes according to spatial harbour zone.
The results of this thesis support landscape architects and urban planners to plan suitable types of street greenery within various harbour functional zones. By applying the design guidelines in former harbour contexts new living and working areas with thermally comfortable and attractive streetscapes can be created. That way, this thesis contributes to the redevelopment of harbour areas being converted into more liveable urban environments in growing cities.

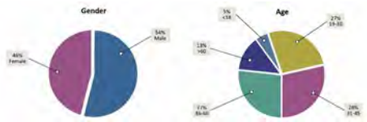
"Imagine the temperature is over 25°C and you are walking on this street..."
People were asked to evaluate the images according to how thermally comfortable and attractive they perceived the street under given circumstances, and then to briefly describe the reasons for their preferences.



The questionnaire consisted of four series of 16 full-coloured images as visual stimuli and two main questions (both closed-ended and open-ended) associated with thermal comfort and attractiveness.

Residential Waterfront	▪ Residential buildings with a view to the water ▪ Open waterfront with harbour views	▪ Using vegetation ground covers (e.g. grass) to provide spaces for outdoor activities and create inviting atmosphere. ▪ Greening the waterfront with ground and low-height vegetation to create soft edge with the pavements and beautifying the spaces. In this way, the presence of greenery are in people's visual field and therefore lead to a better thermal perception as well as aesthetic appreciation. ▪ Choosing smaller trees or positioning the trees specifically to avoid obstructing the view, both at street level and from the windows of the residential buildings next to the waterfront.

Implementation of the design guidelines: An example of residential waterfront.



Age and gender composition of the survey respondents. A total of 106 valid responses were collected (N=106).

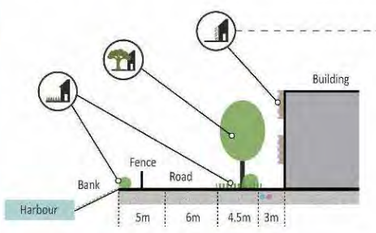
Rankings of different greenery types from the best (left) to the least (right) in terms of thermal comfort and attractiveness.

Sum points of the different greenery types in each of the four harbour functional zones. The size of the dots approximates the total of the points.

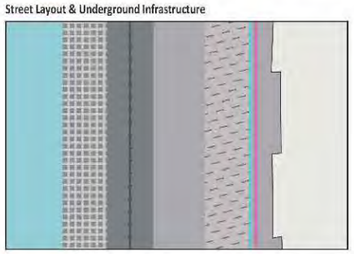
Functional Zone	Thermal Comfort				Attractiveness			
	No Vegetation	Low-Height Vegetation	Wall Vegetation	Trees	No Vegetation	Low-Height Vegetation	Wall Vegetation	Trees
Port-Industrial	1.13 (.46)	2.52 (.56)	2.42 (.63)	3.92 (.43)	1.38 (.71)	2.41 (.80)	2.50 (.81)	3.72 (.69)
New Business	1.09 (.38)	2.35 (.55)	2.74 (.67)	3.82 (.57)	1.36 (.73)	2.30 (.66)	2.76 (.93)	3.58 (.78)
Residential	1.08 (.39)	2.35 (.54)	2.70 (.62)	3.87 (.50)	1.27(.63)	2.37 (.71)	2.58 (.74)	3.77 (.65)
Residential Waterfront	1.22 (.62)	2.53 (.68)	2.52 (.69)	3.74 (.72)	1.44 (.81)	2.47 (.85)	2.42 (.76)	3.66 (.78)
Total	1.13 (.11)	2.44 (.07)	2.60 (.03)	3.84 (.12)	1.36 (.07)	2.39 (.09)	2.42 (.09)	3.68 (.07)

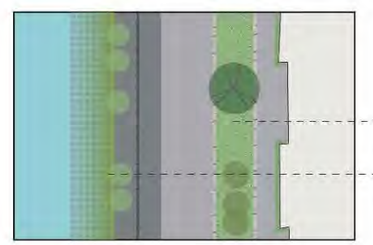
Mean points of the different greenery types in each of the four harbour functional zones; by using a scale range from 1 (least thermally comfortable to; least attractive) to 4 (most thermally comfortable; most attractive) (N=106, standard deviation in brackets)

Visualisation of the ranking results. This figure outlined the relative significance of the four greenery types in each of the harbour functional zones distinguished by colours.



Street Layout & Underground Infrastructure





Aesthetic typologies for landscape experience in community gardens, on the example of the Voedseltuin IJplein.

SOCIAL EXPERIENCE

SYMBOLIC VALUES

SPATIAL EXPERIENCE

SENSORY EXPERIENCE

Fruzsina Gyertyán
dr. ir. Ingrid Duchhart
prof. dr. Arnold van der Valk (LUP)
ir. Charlotte Buys (DRO Amsterdam)

Growing Delight

The aesthetic dimension of urban gardening in Amsterdam

Abstract

In recent years, urban agriculture practices have been growing in Amsterdam, due to its increasing popularity among citizens as well as municipal support. Especially community gardens are wide-spread, in 2014 there were more than 144 initiatives, and numbers are increasing.

Design disciplines, such as landscape architecture, landscape planning and urbanism are also turning towards urban gardening, starting to see it as an integral solution for many social, ecological and economic problems in cities. Among the many discourses about urban gardening, aesthetic experience is yet barely addressed.

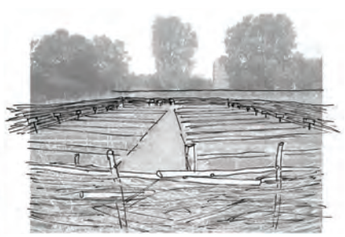
In this study, the phenomenon of community garden(ing) aesthetics is investigated through field visits to six community gardens in Amsterdam, and through theoretical exploration in literature on urban gardening as well as on landscape aesthetics. The landscape experiences in visited gardens have been analyzed and assessed, showing common qualities in four major aspects: delight on the microscale; a visual pattern of utility; the importance of community and identity; and the opportunistic exploration in garden creation. As a result, four broad aesthetic typologies have been defined for further design exploration: sensory-, spatial-, social experiences and symbolic values, in the framework of gardening.

The findings have been applied in an aesthetic landscape design for the Voedseltuin Ijplein and its close surroundings in Amsterdam Noord. Following a pragmatic landscape analysis, a detailed investigation of the gardening community and observing other uses of the space, the main aim of the design was defined as to increase connectivity. With respect to the existing community garden, design interventions were planned on the adjoining spaces at various scales, forming a green recreational network benefiting both the Voedseltuin, the IJplein neighbourhood and the city of Amsterdam.

The character of the Voedseltuin IJplein, Amsterdam Noord

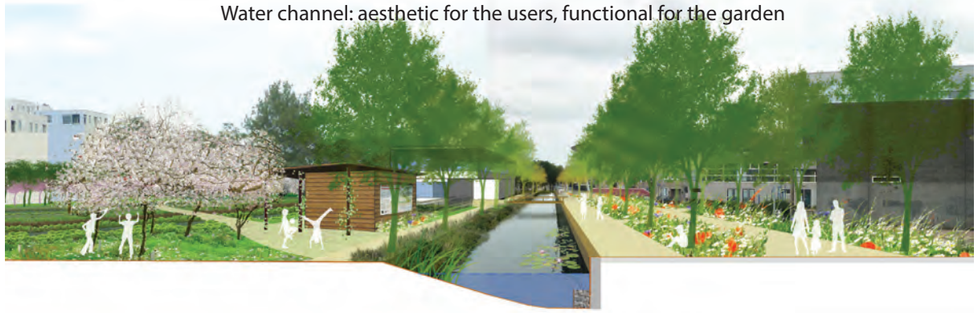
Moestuin Landlust

Moestuin Parmenides



Brediustuin

Water channel: aesthetic for the users, functional for the garden



Boulevard - the "spine" of the neighbourhood

Promenade by the School

The design objective on the neighbourhood-level was to resolve the pragmatic conflicts in the use of space, while emphasizing the aesthetic values found in the Voedseltuin. Therefore a green framework have been created from elements of urban agriculture, with linear structures for movement and recreation, containing plenty of in-between spaces for gardening and food production.

Meeting-points on the borders encourage social exchange. The dynamics between inhabitants and their activities in the landscape will become part of the design.

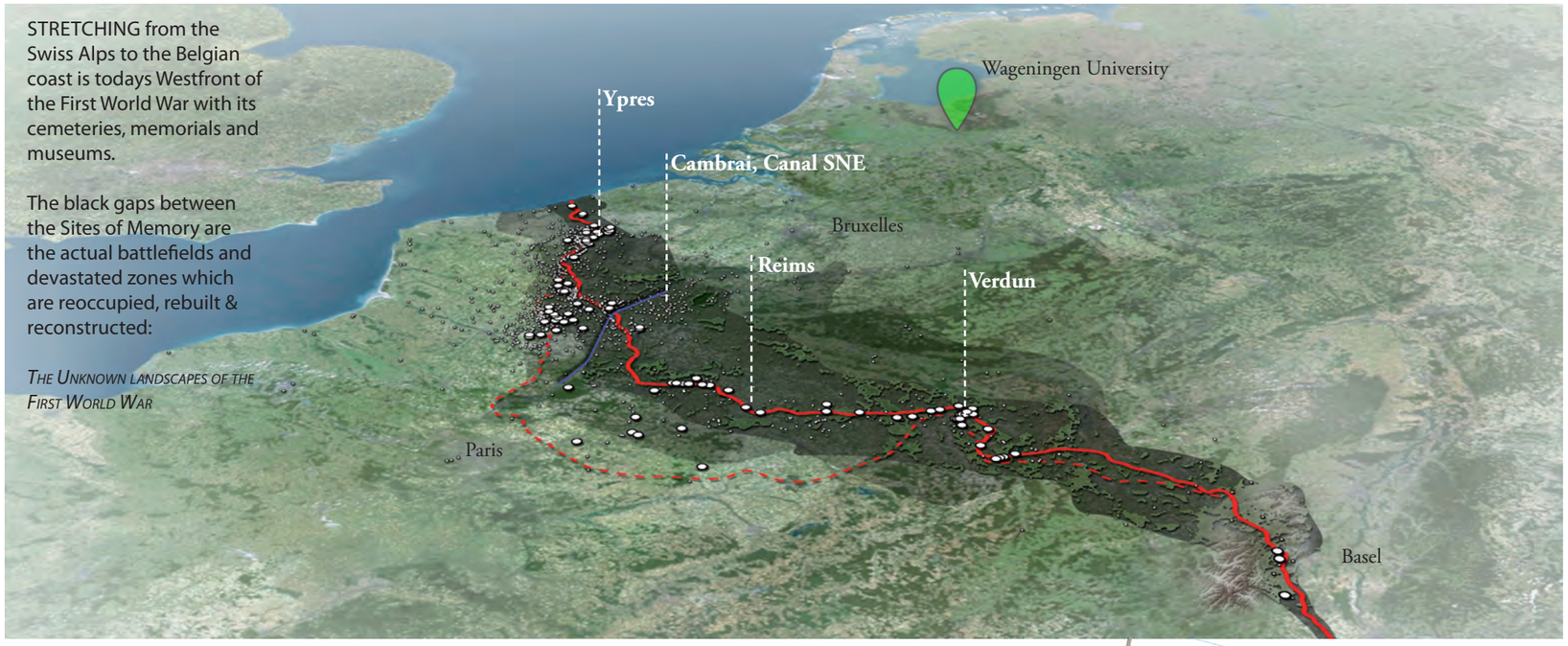
Water reservoir
Community orchard
New community garden
Allotments
Boulevard (car free zone)
Allotments
Relocated daycare
Revitalized water channel
Ferry station
Voedseltuin IJplein
School
Promenade & public herb-garden
Wilhelmina Dok & new boat connection
N
50m
100m

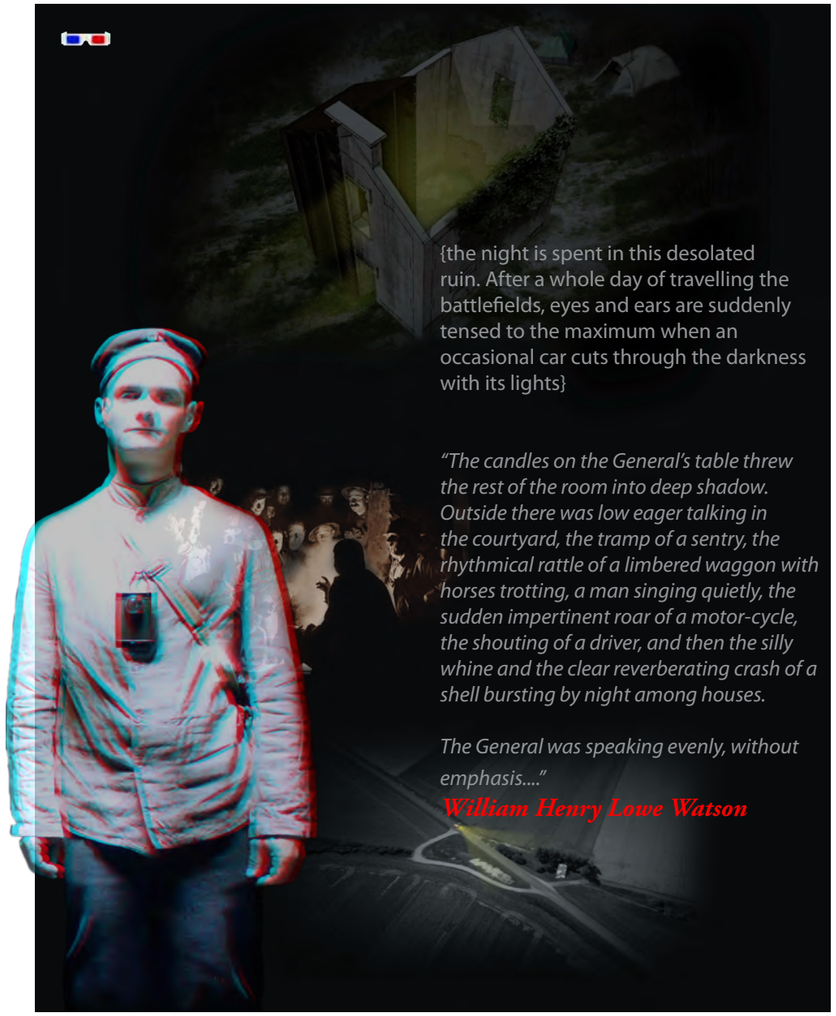
ir. Jaap Dirk Tump
1st supervisor: ir. Paul Roncken
2nd supervisor: ir. Rudi van Etteger

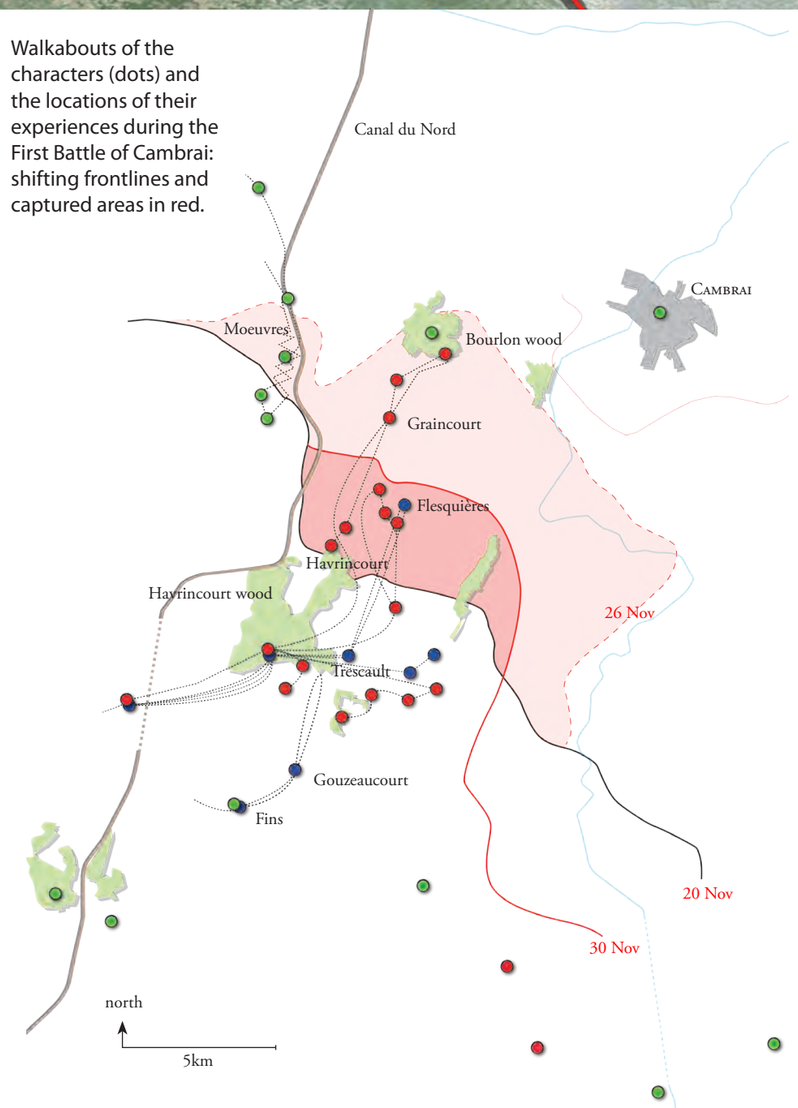
ON DESIGNING EXPERIENCEABLE STORIES

in the Unknown Landscapes of the First World War;
Western Front, 2014-2018

a pragmatic approach to Landscape Narratives
+ 5 episodes to the 1917 Cambrai battlefields







Abstract

Todays Western Front, from the Belgian coast to the Swiss Alps, offers a huge contradiction: a contradiction between the actual events which took place between 1914 and1918, 'the unimaginable and horror', and what part of history is being represented in this landscape today:

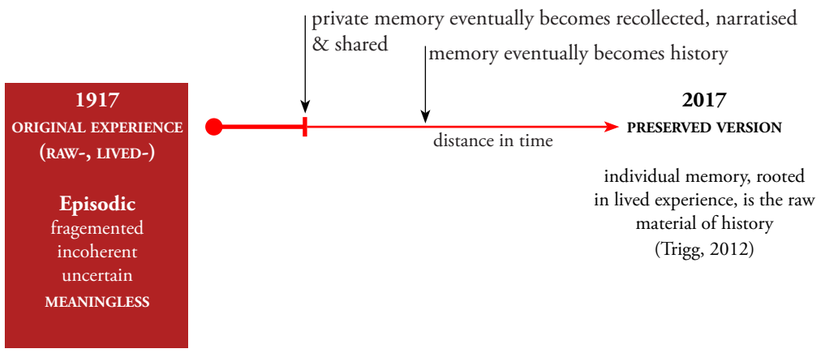
the sad ending of the story, is that part of history which you encounter if you visit the old frontlines and former no-man's land. The dead collected at thousands of cemeteries; their names engraved on hundreds of monuments.

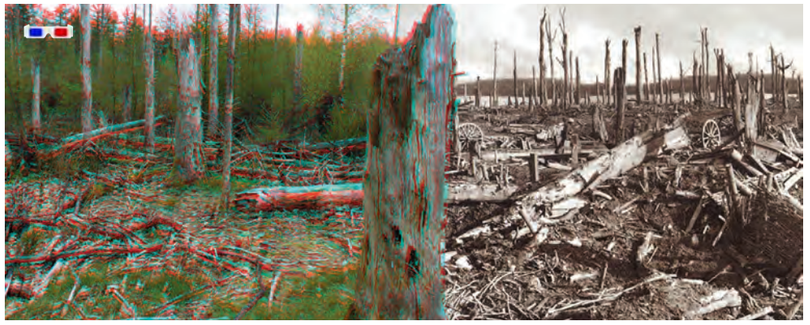
Though, the areas between and beyond the highly orchestred, touristic enclaves evoke 'glimpses' of a war-torn world. By coincidence, a seemingly insignificant landscape along todays Westfront is turned 100 years back in time. This along the delayed construction of Canal Seine Nord Europe.

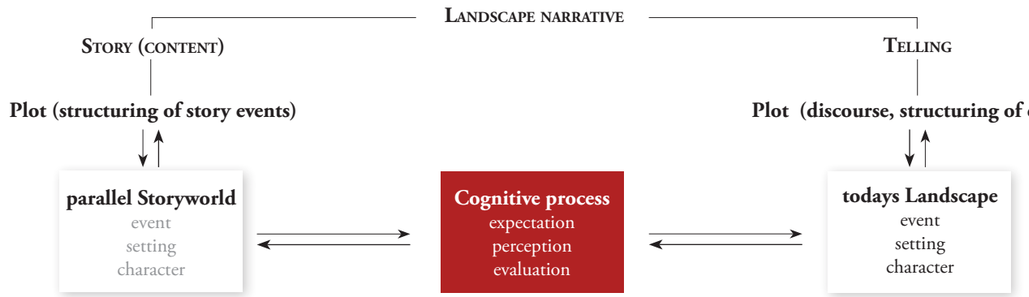
As a spatial storyteller, Jaap Dirk explored innovative ways of telling the stories of those who witnessed and participated in the daily reality of the First World War.

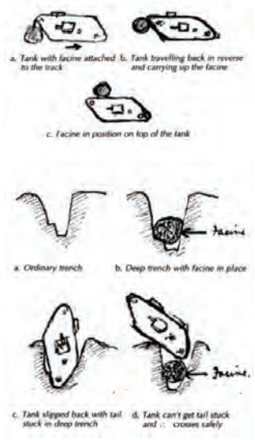
Design- and mapping tools are developed to understand and anticipate on how todays visitors of former battlefield sites interact and empathize with both unknown landscape and unknown soldier.

This thesis argues that the coincidental and ephemeral events in todays Western Front landscape have a major, but unrecognized, influence on the way in which these landscapes are - and should be - perceived, valued and narrated by travellers.





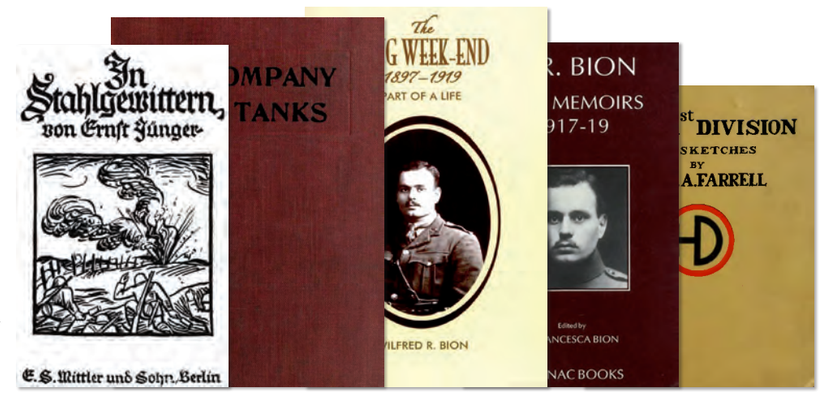




{beaten tracks of canal dozers can be followed to huge facines which appear from the crops and "weighed over a ton" ***Wilfred Ruprecht Bion***}

Graincourt, November 23rd, 1917
"In the vicinity of the embankment, looking like stranded hulls, were many shot-up tanks (...) To be in the narrow turret of such a tank, going forward, with its tangle of rods and wires and poles, must have been extremely unpleasant as these colossuses, in efforts to outmanoeuvre the artillery, were forced to zigzag over the country like huge helpless beetles.

I felt keen sympathy for the men in those fiery furnaces."
Ernst Jünger



Despite depictions of the First World War as pointless, the landscape "still possesses the capacity to evoke both fascination as great emotion"(Wilson, 2009).
With a design case along the 150 km dry bedding of Canal SNE, Jaap Dirk experimented with unexplored, narrative theory and methods, e.g. from game design (Ryan, 2006), which offer ways to EVOKE stories to happen directly in front of the eyes of the weary traveller.

Story events, settings and characters are popping up throughout the region. Their emergence hardly ever follows the rules of traditional plots and genres from literary fiction. They are episodic, untamed, which neither have a beginning nor end. You are in the middle of it.

Starting point is that Landscape narrative design is in the first place about creating a state of mind by which travellers can be lunged into a parallel storyworld;

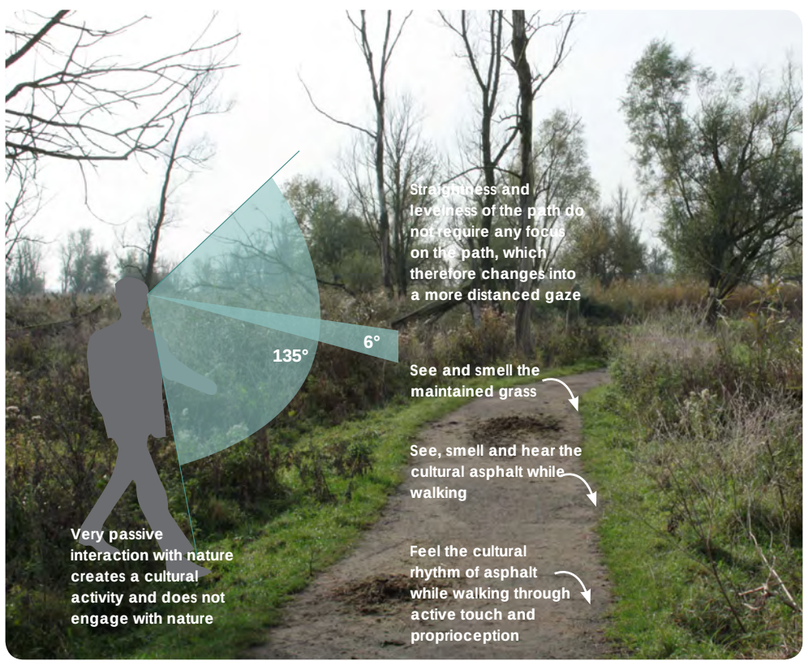
the experience of reading: "AS SOON AS ONE IS IN,
EVERYTHING HAS THE POTENTIAL TO JOIN STORY"

ing. Ludo Dings
ir. Rudi van Etteger MA

The Phenomenology of Dutch Nature

(1) The experience of people and animals

(2) The experience of borders and transborder influences



(3) The type of interaction and a sense of freedom

(4) The quality of the path and routing

Abstract

Cultural influences have an important impact on the experience of Dutch nature, which is often dominated by ocularcentrism. This thesis investigates the experience of so called new and old Dutch nature from a phenomenological perspective, while emphasizing the naturalness of the multi-sensory experience. This exploratory research consists of four cases (Millingerwaard, Oostvaardersplassen, Veluwezoom and 's Graveland) which are investigated by a physical landscape analysis, a literature review, observations and a phenomenological landscape analysis. This approach encompasses three phases. (A) An exploratory walk through the landscape which is recorded by video to remain in the flow of the walk. (B) A systematic walk with predetermined points of a systematic data collection per sense. These systematic results are then critically evaluated in step C through the use of phenomenological methods. The results of this study indicate that Dutch nature is not pristine or untouched. Nor is it an authentic replica of a genuine wild ecosystem. It rather shows a surprising synthesis between culture and nature which suits the Dutch landscape. On the one hand it is natural to the extent that it represents an impression of being away from the everyday urban atmosphere. On the other hand, it is cultural to the extent that one can engage with nature while enjoying the comforts that characterise the urban landscape, such as routing and benches. Old and new Dutch nature areas appear to represent fewer contrasts than expected. They are not necessarily seen as two separate types of nature, but rather as two distinctive sides on the continuum of Dutch nature. The naturalness of the experience of Dutch nature is influenced by a few important factors, which are substantiated by several key-experiences: (1) the experience of people and animals, (2) the experience of borders and trans-border influences, (3) the type of interaction and a sense of freedom and (4) the quality of the path and routing. Vision is by far the most dominant sense in the experience of Dutch nature and other senses are often underrated and neglected.

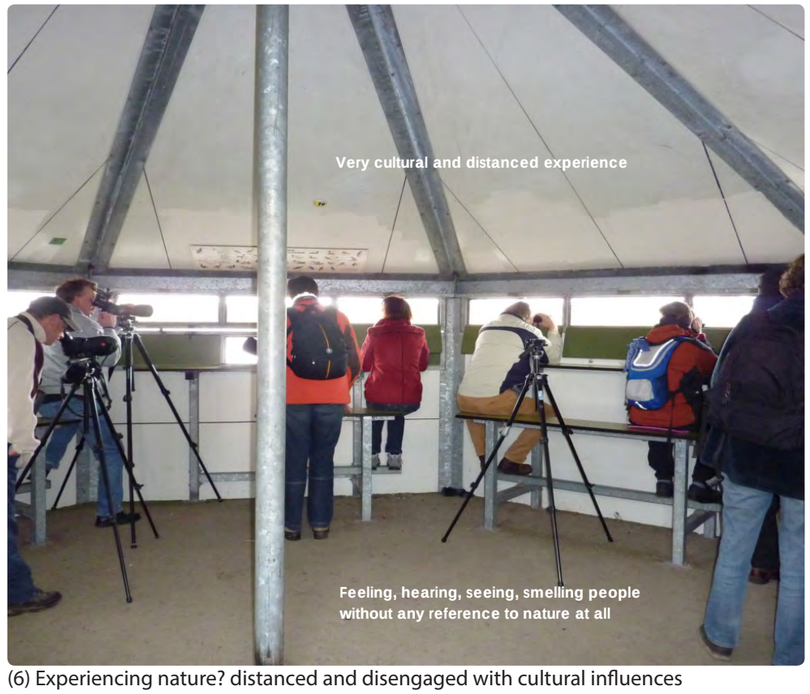
(1) Having coffee at the nature centre and choosing a predetermined route

(2) Entering the area very formally through gates and signs tell you how to act

(3) Walking through nature with the resemblance of a busy shopping street

(4) Experiencing nature as a museum by walking in between two paintings of nature

(5) The master piece of the journey to experience nature is an observation post



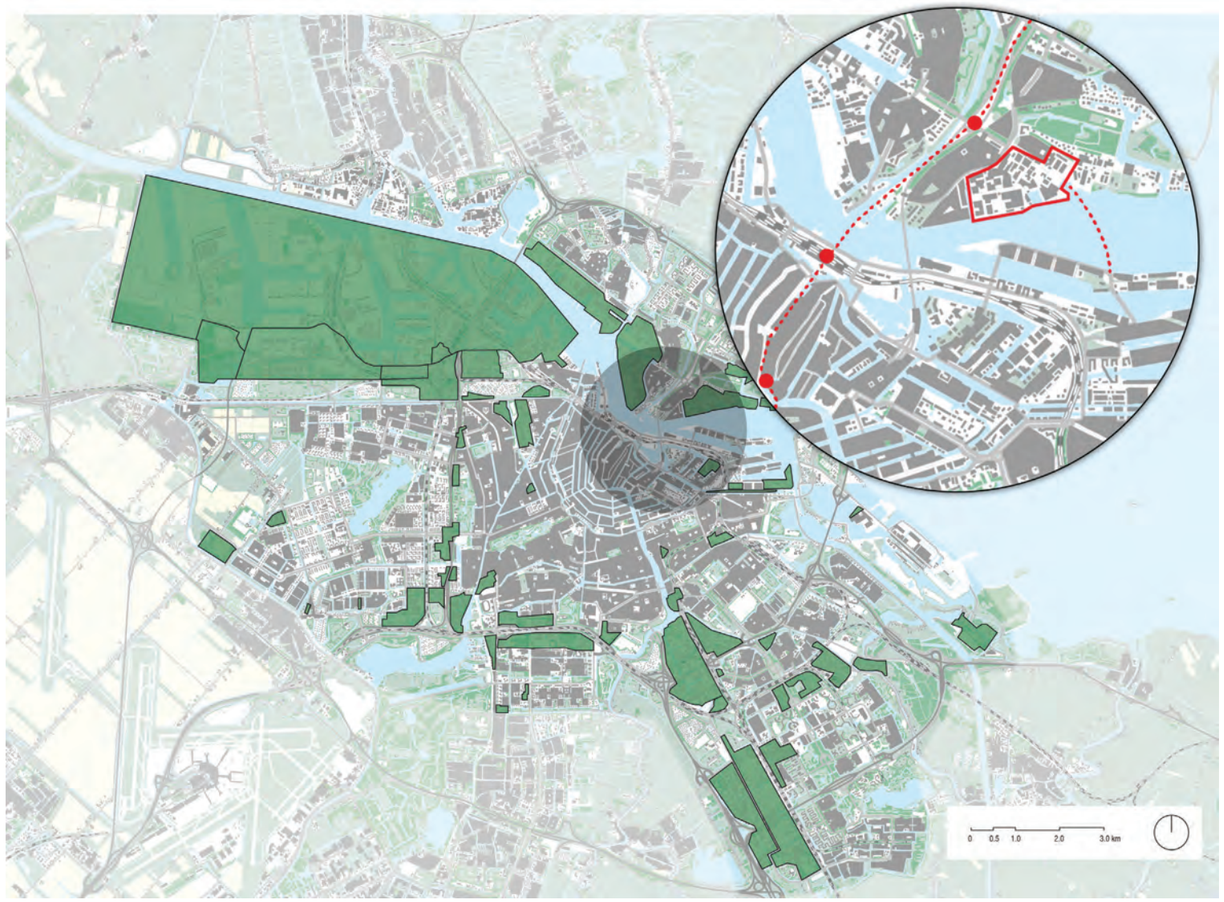
(6) Experiencing nature? distanced and disengaged with cultural influences

Theme Park sensations as an example

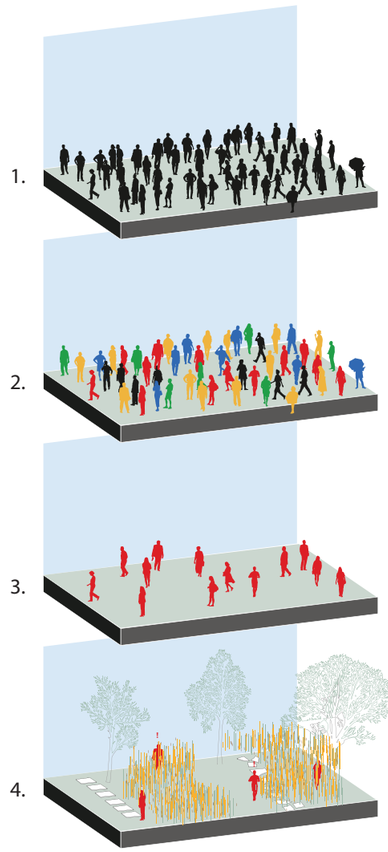
People take turn in experiencing nature through the lenses of their photo camera's from behind the glass by a distanced and safe perspective. When sufficient photographs have been taken to eternalize the experience, they turn their backs to the 'nature experience' by walking back to the car. Before going home, one first pays a quick visit to the gift shop or the catering services at the visitor centre. For most visitors, therefore, the entire visit turns into a means-end practice. This systematic and sequenced activity enforces a passive interaction with nature, because it leaves no room for improvisation. This creates a rather predetermined experience, because most people are subjected to this sequenced activity. The elements in this sequence such as the observation tower, are very cultural. These cultural elements act as highlights of the experience and therefore receive much attention. They mainly influence the experience by their visual appearance, but also other senses. The glass in the observation tower for instance blocks all sounds from the outside and amplifies the sound of talking people. They do not only influence the experience by these direct sensations, but they also provoke a sense of restriction and culturized arrangement. This creates the impression of a staged experience. This systematic sequence is in line with a high visitor rate and restrictions that characterise theme parks.

Abel Coenen and Sascha Geneste
Supervisor: ir. P.A. Roncken

Works of the sublime
Sublime design of the everyday work landscape in the Hamerstraatgebied



The city of Amsterdam with its work landscapes (deep green), plus the location of the Hamerstraatgebied and the new transit connections (red).



Progress of the research.

Abstract
In this thesis we research the possibilities to design a sublime experience in the Hamerstraatgebied in north Amsterdam. This work landscape has strongly been in development since a new subway line and a ferry connection create a better connectivity with the city centre. In the area, much of the industrial past is still maintained and forms now an attractive landscape feature for creative entrepreneurs.

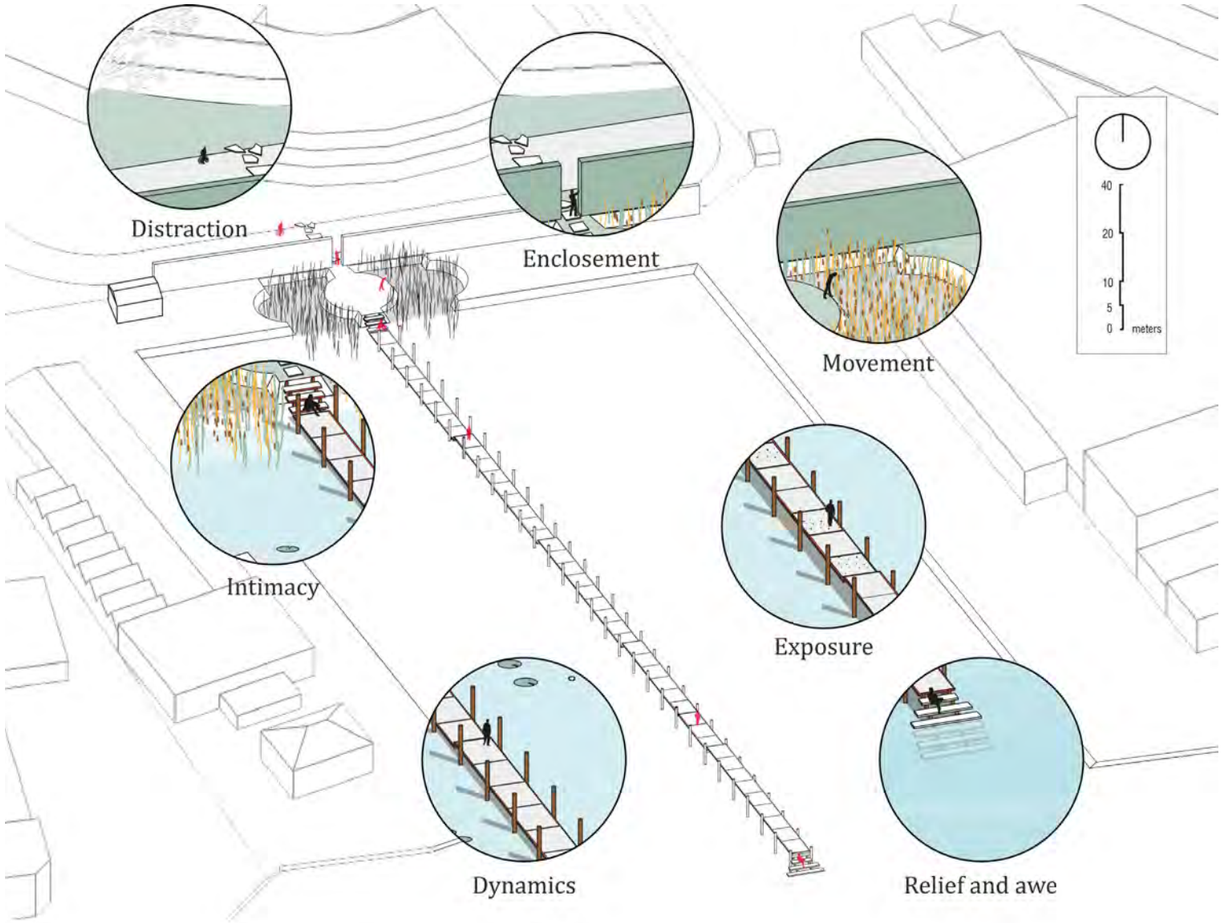
We use three phases to design for a sublime experience in which different approaches are tested. First, we get a grip on the working of the sublime from a designer's position. Using basic literature of the sublime, we formulate a mechanism that explains the sublime. Besides this mechanism, we use literature to identify clues that can be used to categorize different sensations for the sublime.

Our research involves the analysis of current behaviour, experiences and work rhythms of users in the area. We questioned 51 users in the area (1) which can be divided in four archetypal users: the personas (2). Each of these users has his own behavioural patterns and experiences (3) and has specific sublime experiences within the landscape (4). A design aims the addition of a sublime design intervention by a pier in the river, functioning as an outstanding experience within the work rhythms of different personas.

We encounter sublime experiences in our everyday lives and landscapes. The theory of the sublime gives space for different approaches. By exploring several of these approaches we get a progressive insight in how the sublime can be used and what analysis is needed to come to adapted design ideas. We conclude that in this area the sublime can be a valuable source for a landscape design.

The experiences in the Hamerstraatgebied...

Sublime experience based on individual experience in the landscape.



Design principle: Steering design by offering experiential moments, in a linear order.

Design principle: Tension is caused by evoking constant changes and reflections in the relationships between people.

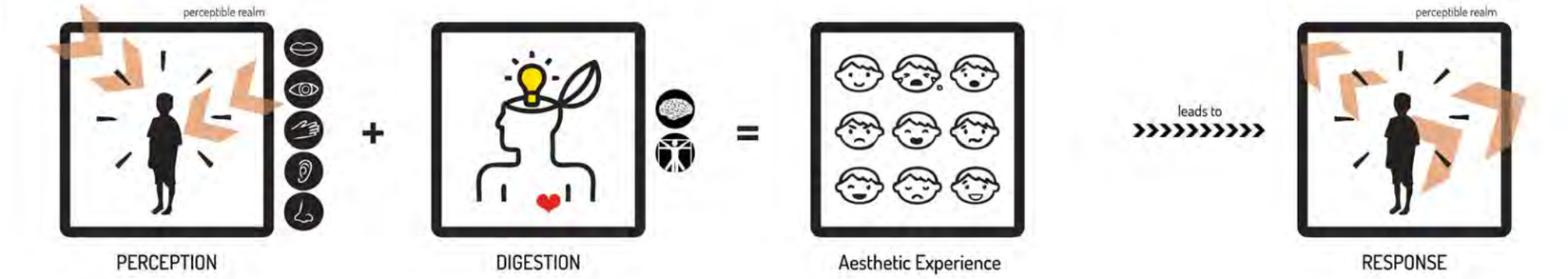
Sublime experience based on the interaction between different individuals.

The experiences in the Hamerstraatgebied...

Zuzana Jančovičová, MSc.
Ir. Paul A. Roncken

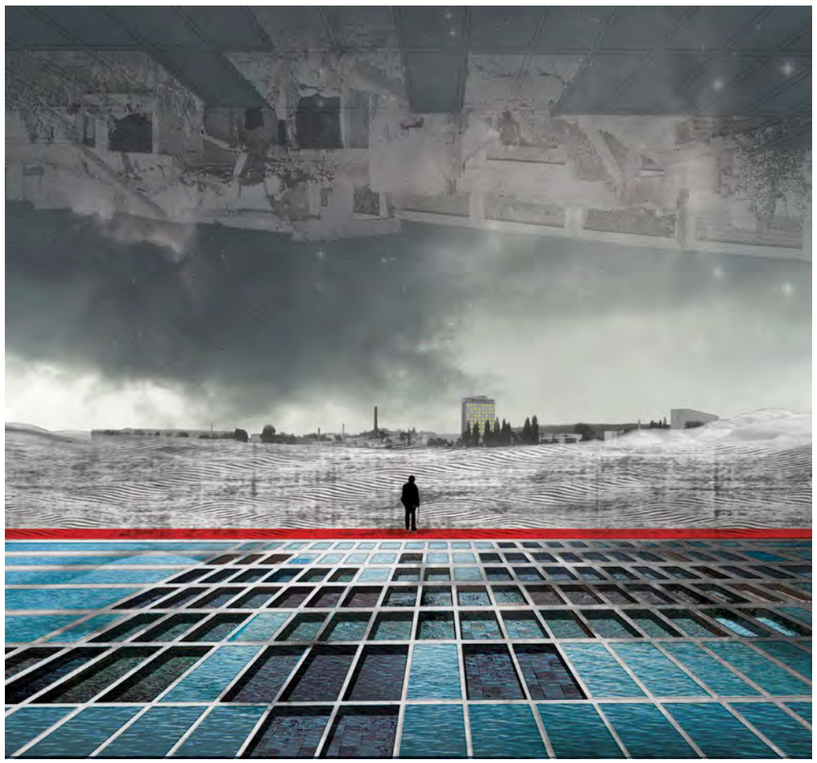
Sublime flooding of the Maniny brownfield

Awaking a sublime sensation by sustainable brownfield re-development



Simplified diagram depicting process of aesthetic appreciation

FORM EXPLORATION | Lentils modeled into various flow shapes, flooding situations and topographical properties



Abstract

Through an intuitive exploration of natural processes and psychosomatic concerns of an individual, this graduation work brings complex theoretical discourse on sublime aesthetics into the pragmatic realm of landscape design. Current definition of the sublime refers to absence in perception, a temporal state of incapacity of understanding where full access to fantasy and imagination is needed in order to deal with growing complexity of our landscapes. Because the climate is changing, we live in constant risk of even greater floods, when we simply cannot predict nor guarantee what form or shape is needed to ensure the ideal safety performance. Design for sublime sensation aims to raise people´s awareness about the restless natural force as a part of urban context.

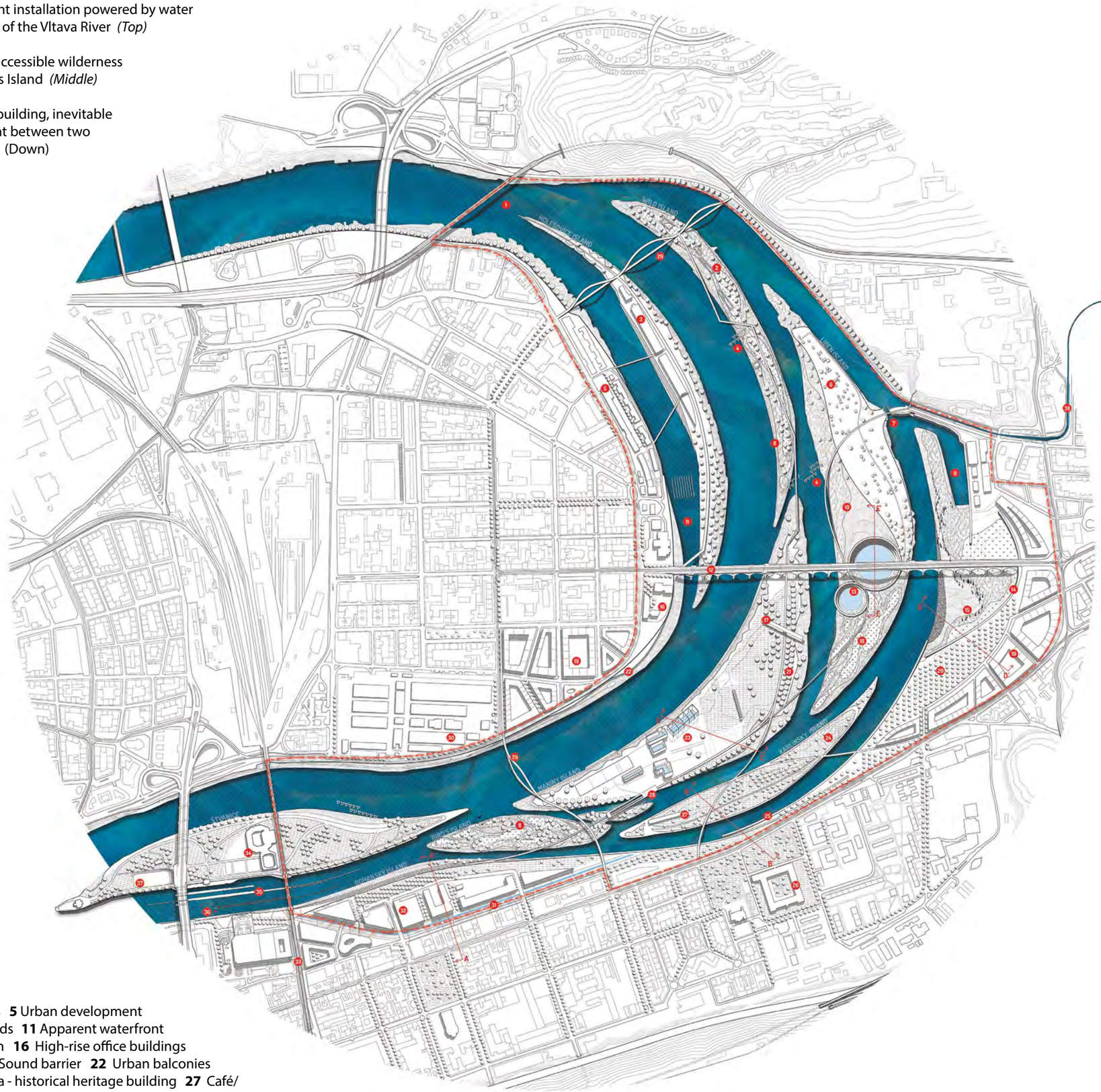
Similarly, the derelict condition of the Maniny brownfield (Prague, Czech Republic) is a result of destructive flood in 2002. Design proposal critically reflects upon current development trends in the city of Prague by providing solution of sustainable flood mitigation and brownfield redevelopment. The aesthetics and performance of appearance of designed elements afford embodied landscape experience of prevailing potential of flood danger. Maniny archipelago (130ha) is a park area that resonates natural might, where unchained natural powers expand freely and engage with cultural dynamics in unexpected ways. Next to the opening of Vltava´s bottleneck and blue network recreation, the established riparian biotopes absorb, hold and slow down excess water and thus help mitigate consequences of flood events. The system of seven islands is easily accessible by public transportation and it is reconnected with a new bike path system. The twelve bridges became acknowledged symbols of water, important design landmarks and inseparable parts of Prague´s identity. The small scale design interventions such as Inner gardens or Light installation enhance the notion of the phenomenon of water by direct and/or indirect perception of its natural dynamics and seasonality.

IMAGINARY COLLAGES | Investigation into existing landscape elements and its potential to become source of fantasies

The light installation powered by water energy of the Vltava River *(Top)*

The inaccessible wilderness of Bird's Island *(Middle)*

Portal building, inevitable element between two islands (Down)



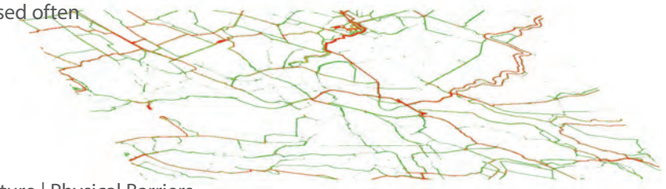
LEGEND
1 Opening river's bottle neck **2** Ruins **3** 1920´s industrial buildings **4** Floating nesting units **5** Urban development after the 2002 flood **6** Allotment gardens **7** Dam **8** Riparian biotope **9** Harbour **10** Wetlands **11** Apparent waterfront **12** Libeňský bridge **13** Fishing ponds **14** Flood defence wall **15** City lagoon & nude beach **16** High-rise office buildings **17** Art hall **18** Feeding channels **19** Proposed urban development **20** Urban forest **21** Sound barrier **22** Urban balconies **23** Inner gardens **24** Miscanthus grooves **25** Mismatching waterfront wall **26** Invalidovňa - historical heritage building **27** Café/ bar **28** Portal building **29** Pedestrian / bike bridge **30** City market **31** Light art installation **32** Modern office/ dwelling buildings **33** Future pedestrian bridge **34** Tennis court **35** Sluice **36** Power generator **37** Sport field **38** Rokytka brook

Master plan

Regional Analysis Research for Design N

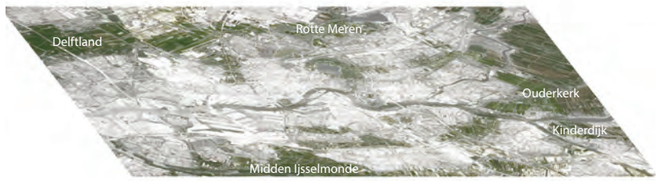
Route Options

Bike Use
Red - used Intensely
Green - used often



Infrastructure | Physical Barriers
Blue ponts - landmarks
Black ponts - elementary schools

Green Space | Natural and Rural Destinations



Waterways | Potential Escape Routes

Refrence Studies Research on Design

N 5 km

Amsterdam - Amstel River

Eindhoven - Green Corridor

Den Bosch - De Dommel

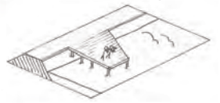
Singapore - Park connectors

New York - Highline

Design Guidelines from Refrence Studies

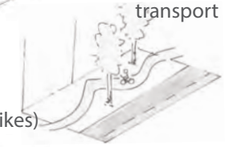
Floating decks

Resting and viewpoints

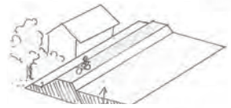


Layered paths

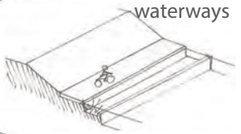
Room for slow transport



Using elevations (dikes)



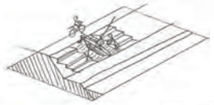
Following / experiencing waterways



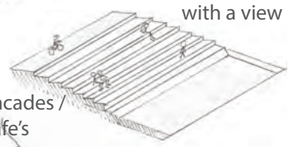
Bridges

Lighting leading the way

Recreational facilities

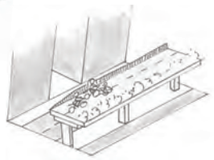


Destinations with a view



Enhanced facades / including cafe's

Elevated paths



A. P. (Anne) Kleine Staarman MSc
Supervisor ir. A. (Adriaan) Geuze
Sep. 2014 - May 2015

Where is the Exit?

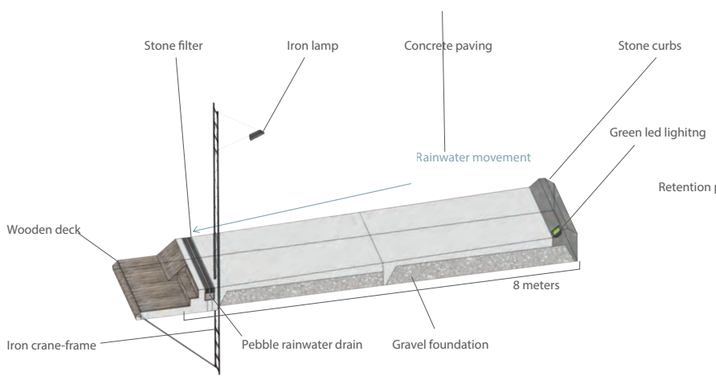
Designing an urban escape route in Rotterdam, the Netherlands

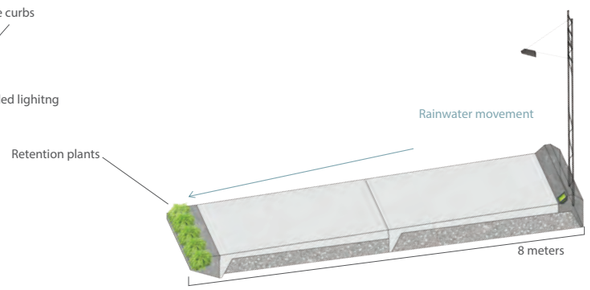
Abstract

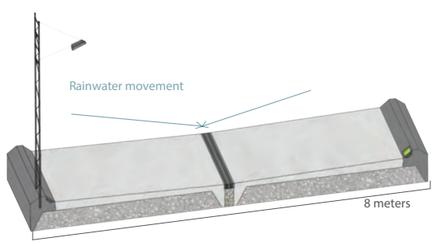
Rotterdam was rebuilt after World War II with a clear focus on automotive infrastructure, taking the human-scale out of the city. Today, highways form a barrier around the city, allowing no walk- or bike path out into the regional green areas such as Kinderdijk or Delftland. One can only easily leave or 'escape' the city by car or public transport. The municipality of Rotterdam wants to attract higher-educated residents to live in Rotterdam and therefore increase the liveability of the city. In the context of making the city more liveable as well as sustainable, a bike route that leads out of the city into regional recreational green space is designed in this thesis.

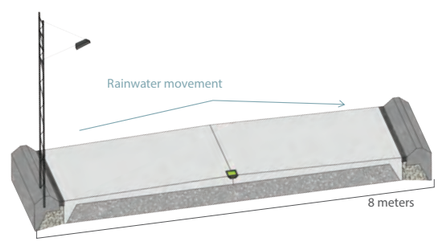
Three methods of design research are used to create a sufficient bike route. The first method is research for design to analyze the relationship between the urban to rural landscape connection and the liveability of the city. A literature review, regional analysis and interviews were conducted. The results of this first method are the elements that an urban escape route should embrace to increase urban liveability. Also a regional analysis determined the location of the routes in the case of Rotterdam. The second method is research on design to find existing design innovations of successful escape routes in other cities. The results of this second method are design guidelines inspired from the five city references. The last method is research by design to find out how such a bike route can be successfully implemented in Rotterdam. The result of this third method is the design of the path and the urban escape route. The results of the three research design methods are presented on this poster. The methods are used in a cyclic process to answer the main research question; in what way can a successful urban escape route be designed to improve the liveability inside the city of Rotterdam? The answer is that an urban escape route can lead to liveability when it embraces specific elements and design guidelines. The route should be an escape from the city, running towards the natural or rural landscape. It should be passing by elementary schools, existing parks and landmarks. It should not be longer than twenty kilometers for recreational bike use and have a minimal amount of barriers. The path itself should not allow any motorized vehicles; it should stimulate walking and biking and have a width greater than six meters for sufficient space. The path should also be surrounded with vegetation where possible to enhance biodiversity, absorb surface water and absorb CO_2. The surrounding green landscape enters the urban fabric through this route to let people out of the city. Sufficient lighting should be present at night to enhance safety and the path should have an appealing name and reoccurring features for recognition. The name of this route design is: "De Mazzel!" Implementing De Mazzel in Rotterdam will provide a human-scaled sustainable route where cyclists dominate and are able to escape the city form time to time. For more results on this research, please view my thesis report.

Path Design Research by Design







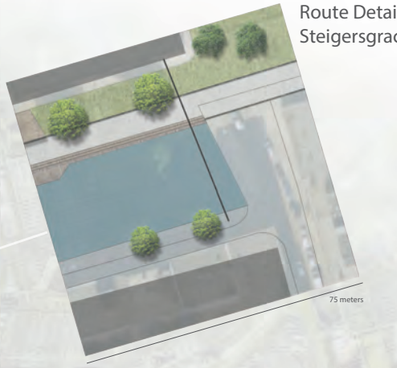


"De Mazzel!" Route Overview Research by Design
City Center to Kinderdijk
(Church to Windmill)
▲N

Start Route | Church

End Route | Windmill

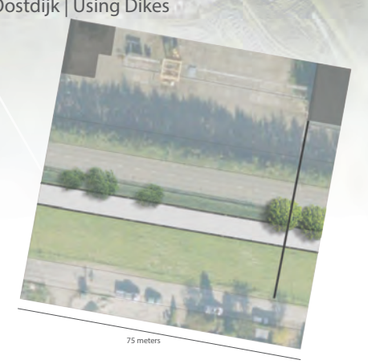
Route Detail Plan 1 ▲N
Steigersgracht | City Centre



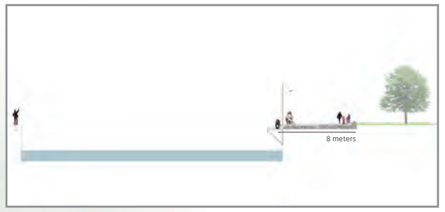
Route Detail Plan 2 ▲N
Charlois |19th Century Neighborhood

Route Detail Plan 3 ▲N
Zuiderpark | Park

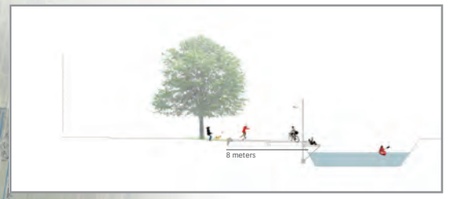
Route Detail Plan 4 ▲N
Oostdijk | Using Dikes



Cross-section 1

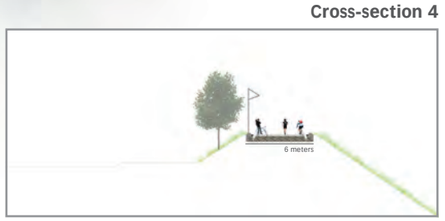


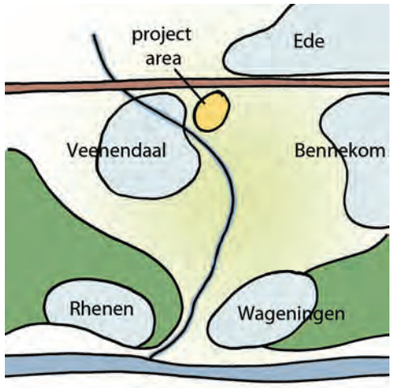
Cross-section 2



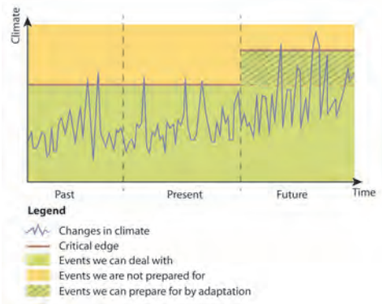
Cross-section 3

Cross-section 4

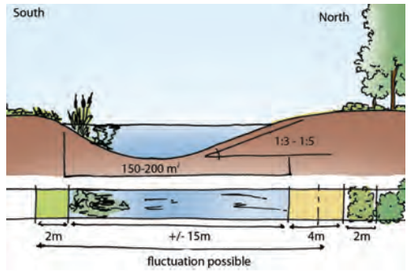




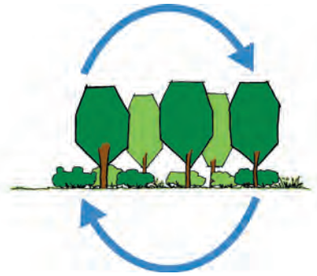
In yellow: the location of the pilot area.



With an adaptive environment, it is possible to increase the amount of climate change events we are prepared for.
[Adapted from: Klein Tank and Lenderink, 2009]



The ecological zone / connection focusses on the Kamsalamander, which has specific requirements to its environment. Like ponds disconnected from the central water system, key areas and corridors.



Ideal is the transition from an urban water system, where water is not infiltrating, towards a natural water system, with more infiltration and greenery which creates a closed water cycle.

Hannah de Winter
Ingrid Duchhart
Wiebke Klemm

Urban and ecological ambitions unified in a waterproof environment

A landscape based design approach
for pilot area Veenendaal-oost

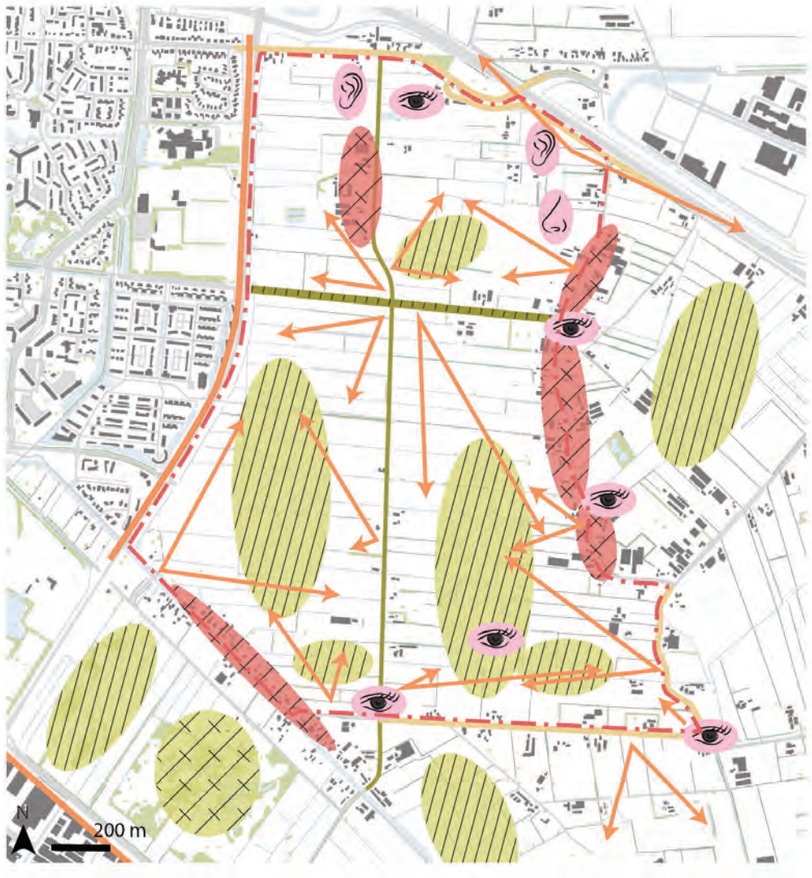
Abstract

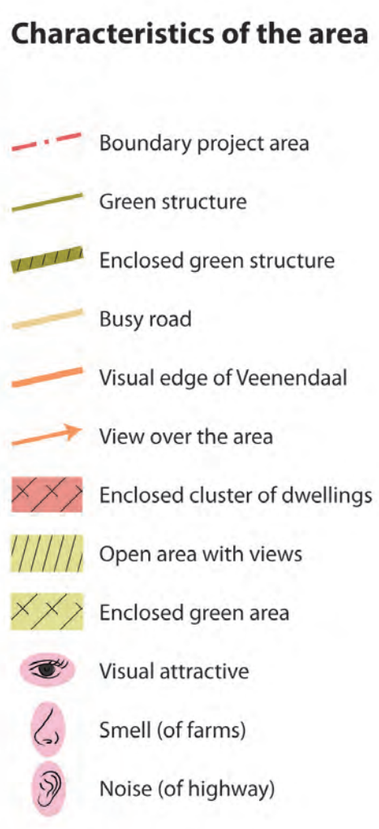
In between Veenendaal and Ede, a new development area is situated. 3200 dwellings, water storage and an ecological zone are planned at this site. Due to the changing climate, more extreme precipitation events will take place. This might lead to flooding in future. That is why the following question is asked: *How can urban and ecological ambitions be unified to create a waterproof environment, in which flooding due to extreme precipitation is prevented?*

In an adapted environment there is less risk on flooding. In order to create a design that meets the needs, the landscape based design approach is used. Which, according to Van Dijk and Veul [2012, p. 38] is:
"An approach that searches for a renewed connection with the landscape and seeks for site-specific challenges and opportunities the landscape offers."

With the performance of a perception study, the character of the area is defined. This is done during fifteen site visits, of which some with experts. As a result of the analysis of the site the following assumptions were made: Remain the open character and views; Build on higher grounds; Strenghten the east-west structure; Visibility of the low, wet areas. This must be combined with the program for the area.

A research by design study, pictures 1-4, resulted in many possible solutions for the site. Those were assessed with respect to the program requirements and the results of the landscape analysis. An important result of this study is the friction between the assumptions and the program requirements. A second assessment on developments in demography, residential market and current projects made me decide to search for an amount of dwellings that fit the landscape and focus on a high end living typology. With this focus it became possible to create an urban and ecological landscape in a waterproof environment.



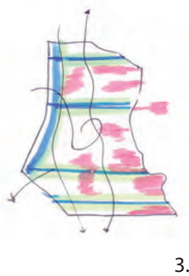


The Benedeneind in its early days. This is the Grift that flows through Veenendaal. In the village there are some remains of this picturesque image. In the rural area this is still the character
[Source: Van Groothest and Bisschop, 2000]

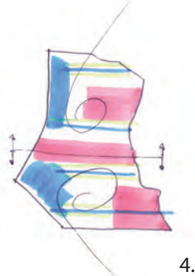
The Hoogstraat in its early years. Water has disappeared, but there are plans to restore some of the water lines in the city centre. In the current situation this would only have recreational and aesthetical values.
[Source: Van Grootheest et al., 2005]

1.

2.



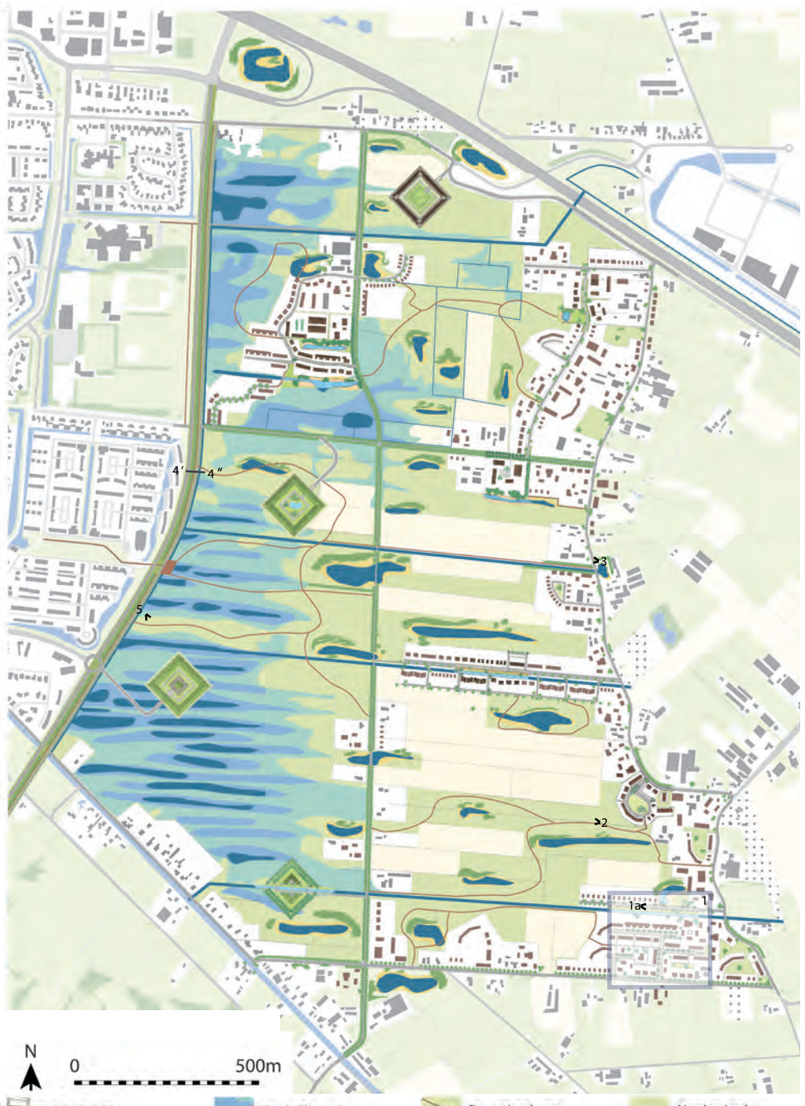
3.



4.

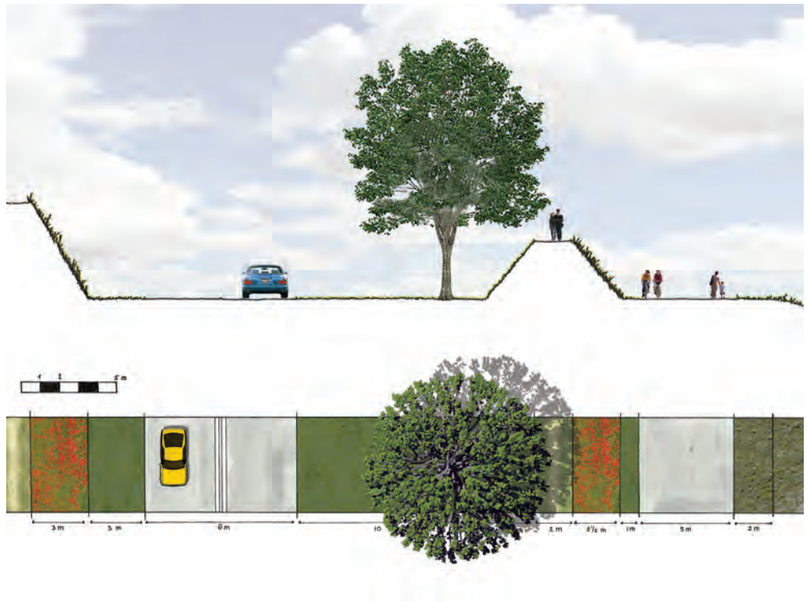
1. Lacks linear landscape orientation, meets the amount of dwellings, openess, water buffer and ecological connection.
2. Meets landscape orientation, limits openess and views over the landscape.
3. Does not meet the amount of dwellings, has enoug space for water buffer, ecology and views.
4. Limits openess and views over the landscape, cannot create an ecological connections. Strenghtens the landscape lines and can buffer water.

An ecological site under construction shows the character and quality of the landscape.



In the design is right balance between urban developments, an ecological zone and water buffering areas. Three larger building blocks are unique places to live. This also offers possibilities to buffer water in that same area and to give the area a recreational and ecological function. On the higher grounds, meadows and agricultural land will still be the character of the area. The landscape characteristics are remained.

1. Combining high end living with smaller structures, suitable for a diversity of people.



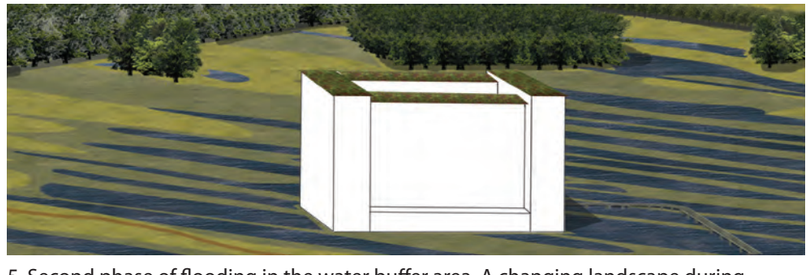
4'' Along the bypass road a tree line will create a green edge. A small dike will serve as buffer between the areas and as a recreational path.

An impression of the elements of the design: water, ecology and urban developments.

1a. An impression of the road along the water. A wide green area along the water creates space for recreation.

3. An impression of the water canal with some dwellings along. Water lines strengthen the views over and the direction of the landscape.

2. A recreational path along a pond. The Kamsalamander is not harmed by recreational users.



5. Second phase of flooding in the water buffer area. A changing landscape during extreme precipitation.

The Zwarte Water region is the connection between the IJssel lake and the Vecht river system, just north of the IJssel river and the city of Zwolle. Here culture, landscape and the climate change affected water system have to find a new balance in the coming decades.

Frank-Juriën Dam MSc
Supervisors: A. van den Brink, M. Brinkhuijsen, A. Kempenaar.

A People's Water Landscape

A community based regional landscape design approach for a changing water system

Abstract

Climate change is the main reason our water safety should be updated once again. Higher dikes result in increased catastrophes when they fail, and the alternatieves, for example in the 'space for the river'-program, result in landscapes in which peoples' traces are being vanished.

The landscape architectural focus however is process and people based, a solid approach for this challenge. This is tested within the Zwarte Water river region, a former estuary landscape where culture, landscape and the effects of climate change will collide heavily in the coming century.

Creating an understanding of how people value and conceive their landscape resulted in a list of 9 values; the basis for an analysis showing the Zwarte Water region society and landscape are highly connected with the water, but especially the past decades the visibility of this connection has been decreased significantly. In the next step, water management strategies have been determined which fit best in every landscape, not only based on their effects on water safety, but especially on their effects on the people.

This has resulted in a water management approach which could handle a major increase in the effects of climate change in the coming century. The first step of this approach is to reconnect people with their landscape; make the landscape related to the water system accessible and readable, to increase the understanding of the water system and what is needed in the future. Together with this the landscape should be prepared, for example with starting building on mounds and designing parks in areas that could be water bypasses in the future. This is the foundation on which future water system interventions, for example higher flooding risks or the building of bypasses, could be integrated in societies.

The classical solution is dike heightening, but when dikes fail, the catastrophe is even bigger.

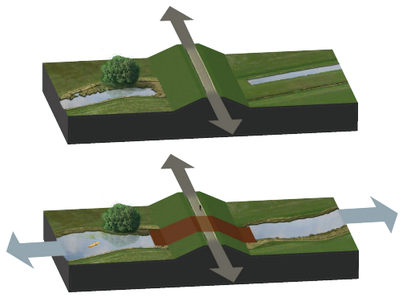
The alternative, for example 'space for the river' projects, like the IJssel bypass near Kampen, decrease cultural values.

People assume they are safe and place their buildings on ground level, instead of on mounds.

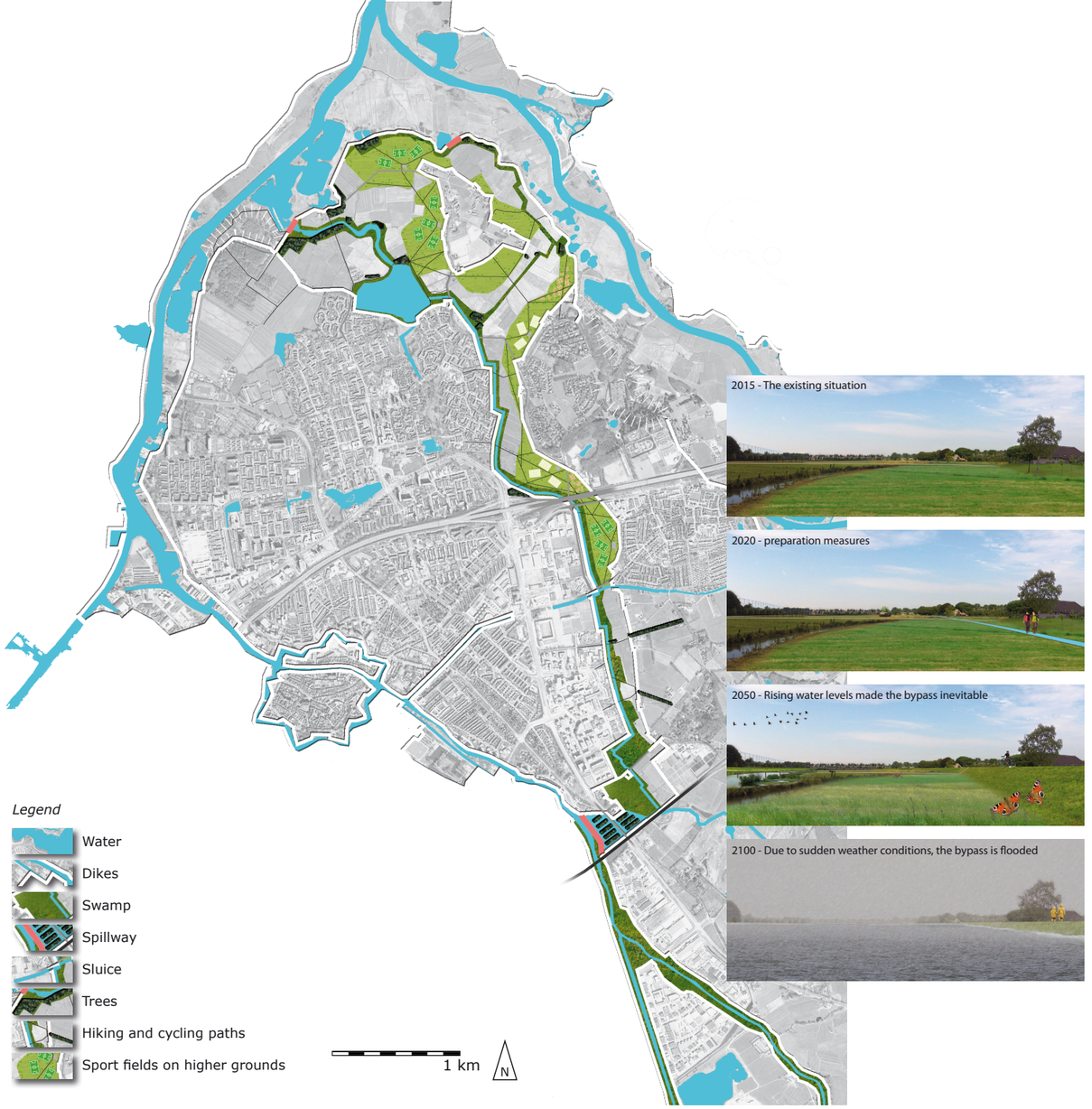
Objects showing the operation of the water system are aesthetically uninteresting.

The Ramspol dam prevends dynamic water levels to be visible in the Zwarte Water region.

Dikes are not always accessible, preventing people to experience the dike system as a whole.



Project example 1: Mastenbroek polder.
This area is full of creek remains, but is characterized by rectangular roads and a dike around. To prepare this area for the changing water system, new farms have to be built on mounds, and creeks are restored, in combination with making them more accessible and readable. To illustrate, nowadays when you are cycling over the dike, you can notice 2 water bodies on each side. The proposed intervention is a portage ('overtoom') to both cross the dike with canoes, and to show the link between those 2 water bodies.



Project example 2: A bypass through Zwolle.
A minor creek basin runs through the city centre of Zwolle, and could cause trouble in case of heavy rainfall or a dike breach. This risk increases in the coming decades, so a bypass could be needed within some decades. To implement this in the future now already an area is assigned for this bypass. This area could be designed as a park, and could led to both understanding and discussion about the future role as bypass, but also to prevent building in this zone.